PATHOGENS OF SELECTED MEMBERS OF THE PAPAVERACEAE-- AN ANNOTATED BIBLIOGRAPHY

ARS-NE-62
July 1975

NORTHEASTERN
REGION

AGRICULTURAL RESEARCH SERVICE • U.S. DEPARTMENT OF AGRICULTURE

Loans. Many of the publications cited are in the National Agricultural Library collection and may be borrowed by employees of the Department of Agriculture and by other libraries through inter-library loan. Loan of periodicals is restricted to the Washington, D. C. area. Please request loans through the Division of Lending, National Agricultural Library, Beltsville, Md. 20705.

Free Distribution. Many publications of the Department of Agriculture and publications issued by the State Experiment Stations and the State Agricultural Extension Services may be obtained free of charge by applying directly to the issuing agency. The National Agricultural Library does not distribute them.

Reproduction. Many of the articles listed may be obtained in microfilm or photoprint form from the Photoduplication Section, National Agricultural Library, Beltsville, Md. 20705. Copying charges for each periodical article or book are:

MICROFILMS: $1.00 for each 30 pages or fraction copied from a single article or book.

PHOTOPRINTS: $1.00 for each 10 pages or fraction of 10 pages for each article.

This publication reports research involving pesticides. It does not contain recommendations for their use, nor does it imply that the uses discussed here have been registered. All uses of pesticides must be registered by appropriate State and/or Federal agencies before they can be recommended.

CAUTION: Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or other wildlife--if they are not handled or applied properly. Use all pesticides selectively and carefully. Follow recommended practices for the disposal of surplus pesticides and pesticide containers.

CONTENTS

ACKNOWLEDGMENTS

The authors hereby respectfully acknowledge the encouragement and helpful assistance of Quentin Jones, Donald Fishler, Paul Lentz and staff, Charles Kingsolver, Kenneth Bromfield, Charles Beebe, and members of the National Agricultural Library staff; Sue Gorman and Robert Freytag for a number of translations; and Hilde McGrath and staff for considerable assistance on the abstracts.

PATHOGENS OF SELECTED MEMBERS OF THE PAPAVERACEAE--AN ANNOTATED BIBLIOGRAPHY

By Chris G. Schmitt and Bernard Lipscomb[1/]

INTRODUCTION

This annotated bibliography presents a brief review of some of the more important contributions on pathogens of several members of the Papaveraceae. Although the bibliography is quite extensive, we realize that it is not complete. A work of this type can never be completely finished because of continuous efforts on the part of researchers in all parts of the world. Our sincere apologies are offered to any whose contributions have not been included. In some instances omissions are due to lack of availability and in others to a language barrier.

Because of frequent occurrence of the genus name *Papaver* in the review and bibliography, we have abbreviated that genus name with a *P.* to conserve time and effort.

National Agricultural Library call numbers are included in the bibliography citations to assist those who desire to obtain original articles.

1/ Respectively, plant pathologist, Plant Disease Research Laboratory, Northeastern Region, and agricultural research technician, Mycology Laboratory, Plant Protection Institute, Agricultural Research Service. Mr. Lipscomb is chiefly responsible for the bibliography, an integral part of this report.

DISEASES CAUSED BY FUNGUS PARASITES OF PAPAVERACEAE

Parasitic Leaf Drying, or Poppy Fire

Taxonomy

Pleospora papaveracea (de N.) Wint., 1887 (604) [2/]

Syn.: *Cucurbitaria papaveracea* de N., 1863 (468).
Pleospora papaveracea (de N.) Sacc., 1883 (468).
Sphaeria pellita Fr., 1821.
Pyrenophora pellita (Fr.) Sacc., 1883 (325, 468).
Pleospora pellita (Fr.) Rab., 1887 (325, 368).
Sphaeria calvescens Fr., 1843.
Pleospora calvescens (Fr.) Tul., 1863.
Pyrenophora calvescens (Fr.) Sacc., 1883.

Imperfect stage, chiefly responsible for parasitism.
Dendryphion ('*Dendryphium*') *penicillatum* (Cda.) Fr., 1840 (96, 97, 121, 617).
Brachycladium penicillatum Cda., 1838.
Helminthosporium papaveris P. Henn., 1907.
Helminthosporium papaveris (as 'papaveri') Saw., 1918 (325, 498).
Dendryphium papaveris (Saw.) Saw., 1959.
Dendryphium ramosum Cooke, 1871 (498).

Distribution and Hosts

Especially common in Europe on *P. somniferum*, poppy fire has been found on this host in the Orient and in Australia. It has been seen upon *Chelidonium majus* L. and there are scattered reports of its occurrence upon several *Papaver* species. As a pathogen, the fungus is closely restricted to species of *Papaver*, but as a saprophyte it can grow on various genera (23).

Symptoms

Seedlings attacked may die before emergence when inoculum is present on the seed. On diseased plants that emerge there is root rot, browning, and constriction of the xylem. Roots and even whole plants may turn black. Before and during blossoming, mass infection of leaves develops resulting in numerous black-brown to black angular spots. Blue-black striping appears on stems, leaf bases, and veins. Lower leaves wither. With high humidity

---

[2/] Underscored numbers in parentheses refer to bibliography, p. 31.

sporulation occurs and spread is rapid. Flower heads can also wither and become black-brown. The discoloration spreads to the capsules from diseased peduncles. If capsules are infected early, they are deformed, remain small, become brown, and there is no yield. Seed on carpel walls may be covered by mycelium and conidia. Seed adhere tightly to capsule walls. Tracheomycosis was a feature of all diseased plants examined. Infections during the rosette stage gradually constrict the crown. Water and food supply are reduced; plants turn yellow and finally collapse (325, 354, 379, 395, 451).

Description

The considerable variation observed in spore sizes in response to differences in environment and substrate are indicated by measurements of various investigators and helps to explain the multiple epithets applied to this fungus. Measurements of spores and fruiting structures by various investigators are given in table 1.

After an intensive study upon conidial size and septation, Ballarin (23) summed up the cause of variation in his statement that conidia from poorly nourished cultures were small and had few septae compared with the large multiseptate conidia from well-nourished cultures or from poppy capsules. Schmiedeknecht (509) made similar observations. Khristov (235) and Ballarin (23) demonstrated protoplasmic connections between individual cells of conidia at the center of septae. Chlamydospores are terminal and intercalated, single and in chains. On carrot agar they averaged 12.6 x 12.9 µ (325).

That the imperfect stage can be derived from the germination of ascospores has been demonstrated by several researchers (150, 152, 325, 617). Based upon observations that perithecia of both *Pleospora pellita* (Fr.) Rabh. and *Pl. papaveracea* (de N.) Sacc. are glabrous, Petrak concluded that they were identical (408). Meffert found that *Pl. calvescens* perithecia were hairy and are found only on *Chenopodiaceae*. She concluded that the poppy fungus was *Pl. papaveracea* (325). Commonly conidia are 4-, 5- or 6-celled (451). According to Sawada *Helminthosporium papaveris*, *Dendryphium penicillatum* (Corda) Fr. and *D. ramosum* Cooke all occur on *P. somniferum* (504). There is no advantage in belaboring his descriptions of these since they are all the same fungus.

Conidia are produced in abundance on poppy decoction agar plus 2 percent glucose (24, 325). Physiologically acid salts (pH 5.6) inhibited and alkaline salts (pH 7.5-8.0) promoted growth in nutrient solutions. Best sources of carbon were lactose and glucose, and of nitrogen, potassium nitrate, asparagine and glycocol (325). Ballarin found nitrates and ammonium compounds were suitable nitrogen sources (23). Nature of the medium greatly influenced manifestation of characteristics of individual strains (509). Mycelial growth rate was distinctly retarded when relative humidity dropped below 98 percent (510). In liquid medium optimum pH for

TABLE 1.--*Measurements of spores and fruiting structures of Pleospora papaveracea (Dendryphion penicillatum)*

Investigator	Conidia	Conidiophores	Perithecia	Asci	Ascospores
Ballarin (23)	5-8x30-35 μ (on malt agar) 5-8x35-70 (on capsules)	30-50 μ	300 μ (host) 70 μ (media) 170-310 wide	90-110 μ 10-15x	8x17-22 μ 6.5-11x
Barcacka (24)	6.6-10.6x18-112		120-240 high	84-135	16.5-27
Darpoux (94)	4-11x15-60	4-7x20-60	300 max. dia.	12x100	7x20
Ducos (112)				10-11x 110-150	8x22
Gizhitskaia (149)	3-5x25-35				
Khristov (235)	5-8x15-57 (oat agar)				
Meffert (325)	3-7x10-22 uniseptate 7-8x31-40 quinquiseptate		140-390x 180-360	11-16x 106-134	5-10x 15.5-24
Mraz (354)	5.2-11.7x17-42			90-110	8x17-22
Sawada (498)	7-11x22-112				
Tanaka (550)	7-11x22-112	6-7x86-130			
Winter (604)				10x100	7-8x18-25

mycelial growth was near 5, minimum 3 and maximum above 10 (23). Starch and pectin were degraded (325). Cellulose was not utilized, but all sugars tried and poppy seed oil were used (23).

Epiphytology

Initiation of infection in the spring is often from seed from diseased plants (235, 325, 449 to 451) or can occur from conidia or ascospores from debris of the previous crop or from wild species of poppy (325).

In the Ukraine poppy fire appears in June and mass infection follows in July, usually at the bud stage. High humidity in June and July favor infection. No resistant varieties were found (38). Disease appeared at Seine-et-Oise in July 1944 and by August nearly all capsules had been attacked, but only the late ones were severely damaged. Infection was obtained in a saturated atmosphere and spots appeared in 3 days. Intensity of attack varied with variety (94). *P. somniferum* is more prone to attack than are wild poppy species. Strains of the fungus varied in virulence (325). Conidia are spread by wind, insects, and man; infection is favored by high temperature and humidity. Incubation period is 4 days (128). The fungus can penetrate from any point on the capsule wall (144, 324, 325). One investigator maintained that the fungus may be impeded by reasonably narrow spacing to insure rapid and uniform crop growth (144).

Ballarin (23) noted that infections were more common on border plants than on plants in the center of the stand and attributed the higher incidence upon border plants to their greater succulence and slower maturation. Plants are most susceptible as seedlings and at flowering. Infection begins on lower leaves and spreads upwards. Strongly branched plants in thin stands mature more slowly and are more severely infected than poorly branched plants in thick stands (167).

Grümmer (168) observed that infection of older plants does not occur until some part of the leaves are predisposed to the fungus through protein decomposition. Weather must also be favorable for attack when this condition is met. Chlamydospores may be important in spanning unfavorable growth periods. High moisture and temperature (24 to 30° C. opt.) are necessary for an epiphytotic (128, 235, 395). Plants may be attacked in all stages of development (19, 235). Incubation period is 2 to 8 days depending upon temperature. Variability in pathogenicity of strains occurs.

Schmiedeknecht (509) demonstrated the existence of strain differences in cultures derived from many single-spore isolations.

Mraz studied health effect of heterosis in an area where the disease is a problem. He found the Czech varieties more resistant to the fungus than foreign varieties (350, 352, 353). The fungus is seed-borne on *P. somniferum* and *P. rhoeas* (374). The poppy capsule curculio, *Ceuthorrhynchus macula-alba* Herbst., breaks capsule walls either during egg deposition or larval exit.

Fungi enter and cause molding of the capsule. For example, in the summer of 1951 a field free of the capsule curculio had 7.5 percent moldy capsules but 98 percent of capsules were moldy in a field where the curculio was present (380).

Varieties in Romania vary in resistance to the disease (404). In Romania poppy fire increases in direct ratio to sowing density. In 1959 60 percent of Tatarstan 1 and 11 percent of Margurele plants were attacked (435).

Poppy fire is more prevalent in light soils and almost absent on loamy soils in Germany. In thin stands the disease was absent (450).

In north Germany incidence of the disease was markedly higher in the summer of 1941 than in 1942 because of abnormally high temperature in 1941. The disease was severe both in Sweden and in Rostock in 1941 because of the higher than normal temperatures in June and July. A high May temperature in 1942 caused an early and alarming buildup, but cool June and July temperatures dissipated the epiphytotic (450).

Incidence of poppy fire is high in the warmer countries, especially in Bulgaria where whole fields may be destroyed (395). The fungus was favored by high temperature and heavy rainfall in Czechoslovakia, especially in July (348). Not only is germination affected, but plant stand can be greatly diminished. Early establishment of conidial formation permits large spore populations for secondary infection and weather prevailing at this time exerts a deciding role upon disease development. Temperatures during June and July (25 to 30° C opt.) are quite important for disease development. Little, if any, damage occurs on seedlings in cool weather (325). Inoculations of unwounded leaves and stems of healthy poppies with conidia gave negative results even in a saturated atmosphere, but when surfaces were scratched lightly before inoculation, infection ensued in 4 to 5 days (610).

All plant parts at all stages of development are attacked by all spore forms. At lower or higher temperatures where the fungus grows slowly, the host forms demarcation zones that localize the pathogen but do not eliminate it. These gumming demarcation zones of 10 to 30 cell layers form within a week at temperatures below 16° and above 30° C. At temperatures that are optimal for the fungus the host may be overcome in several days. Resumption of favorable temperatures after a cool period permits further depredations. Conidia can germinate within 2 hours of maturity. The optimum temperature for germination is 10° to 20° C, minimum 3° and maximum 33° C. Optimum temperature for infection is 24° to 28° C, minimum 5 to 10 and maximum 34° (616, 617, 618). The earlier the poppies are sown in Romania the more reduced is the attack and the greater the production (435).

In Sweden field temperatures were higher than normal in June 1941 through early August 1941 and infection was severe. The following year temperatures were below normal for these months and poppies were not diseased although plants from the same seed lots raised in the greenhouse at higher temperatures were heavily infected (31).

Isolates of the fungus have remained viable on malt agar at 20° C for 55 months. Rate of germination decreased with age of culture--spores from recent transfers (5 days) germinated best (93). Some antibiotics produced by Actinomycetes and bacteria inhibited the fungus (96, 97, 110, 124, 559). Among its metabolites the fungus produces a widely unspecific phytotoxic substance that is inactivated by oxidation (163, 165). Grümmer (168) contends that infection appears with the initiation of protein degradation in the leaf when weather conditions are propitious so that outbreak of disease is dependent upon both internal and external factors. Susceptibility of leaves was determined by a chlorosis with aging that was associated with chlorophyll disintegration and protein degradation. Attacks of the fungus were more severe on branched indeterminate plants because the slow ripening plants were susceptible over a long period.

Economic Importance

The imperfect stage of *Pl. papaveracea* is the cause of a serious disease variously referred to as parasitic leaf drying, poppy fire, helminthosporiosis, and helminthosporiose of poppy. Ravages of the parasite are closely tied to field temperatures, relative humidity, condition of plants and varieties.

Seed production loss in Germany from an attack of average severity in 1947 was 40 percent (23). In certain fields in France in 1944 up to 50 percent of the plants were affected (94). Poppy fire is the most destructive disease of the crop in Bulgaria. Whole fields have been ruined (235). According to locality in Czechoslovakia, incidence of disease varied from 2.5 to 98.8 percent. Yields in attacked fields ranged from 655 to 997 kg/ha instead of the expected 1,000 (348, 351). The fungus is indigenous to southeast and eastern European areas where it is the greatest danger to poppy cultivation (379).

Seed yields in relation to seeding date were recorded in Romania in 1960. Seeding dates were March 21, April 6, April 19 and May 12; corresponding yields were 525, 275, 225, and 0 kg/ha. Not only were yields reduced by delayed seeding, but a concomitant reduction in seed quality attributable to degree of infection occurred (435). Yields of two resistant varieties in Romania were twice that of the two susceptible varieties over a 5-year period (434).

In Oudenbosch district of the Netherlands only 15 percent of the plants remained free from infection in 1932 (420). The pathogen was the cause of considerable decrease in percentage germination of poppy seed and of seedling injury. It was by far the most common cause of seedling damage in an assay of fungus flora on 400 opium poppy seed lots from various regions of Poland (612).

Control

Early seeding is advised, March or early April in Germany to obtain maturity before the onset of high temperatures of July and August (325). In dense stands plants mature more rapidly (don't remain succulent as long) and are less liable to attack. Plants around borders were more severely attacked. Increases in seed yield were found with increases in density from 12 to 22 plants per square meter. In densely planted poppies 63.7 percent of capsules harvested were healthy, but only 11.1 percent were healthy in the outer rows (23). Early seeding and dense stands reduce seed losses (23, 435). Resistant varieties are recommended (435). Formalin at 0.25 percent as a seed treatment was effective. Bordeaux was not regarded as economical as a field spray (24). Seed treatment with Uspulun and Germisan, Gramisan, TMTD, or Agrosan was effective (30, 31, 435). TMTD and Germisan appeared to stimulate seed germination (435). Darpoux (95) advised sanitation, including burning of plant debris after harvest; practice of 3 to 4 years' rotations; treatment of seed with 300 to 400 g/hectoliter of organic mercurials or copper carbonate. Similar control measures were advocated by Flachs (128).

Grümmer (164) suggested cultivation of poppies along with cover crops of carrots, beets, and yellow clover to limit the disease. This effects the uniform growth and maturity Gassner advocated through seeding poppies and carrots adjacent to a dense poppy stand (144). Antibiotic containing filtrates of Streptomycetes were effective in controlling helminthosporiosis through seed treatment. Filtrates of *Penicillium patulum* and of *Penicillium expansum* were effective but were phytotoxic when the active ingredient (patulin) at 200 ppm was too concentrated (251). Direct attacks of streptomycete strains upon *D. penicillatum* hyphae have been observed (364).

Either Captan or Thiram at 0.5 percent was effective as a seed treatment in the Netherlands (289). The main infection of seed poppies occurs in the Netherlands after the crop is cut and stands drying in the field. During wet weather 50 percent of the seed may be contaminated in this manner without loss of yield (290). Capsules should be dried rapidly after harvest to prevent deterioration of seed by fungus overgrowth that often occurs with slow drying (23). Losses were reduced with applications of lime ($CaCO_3$ 10 dz/ha) but KCl in the absence of lime on loess soil at Jena resulted in heavy infection (313).

Disease severity was reduced in the Ukraine by soil amendments of borate and manganese superphosphate (30 kg/ha) (336). Agronal at 0.5 kg/100 kg seed was an effective seed treatment and was not phytotoxic to seedlings even at twice this dosage (349). Thiram 80 percent at 200 to 400 g/100 kg seed was effective (534). Copper oxyquinolinate (18 percent Cu at 600 g/hℓ of seed prevented spore germination and was not phytotoxic on treated seed stored for a year after treatment. Ferbam at 700 g/hℓ gave good control but was less effective than the copper compound. The best liquid treatment was 0.02 percent unalcoylthydroxymercury and was least phytotoxic to seed of the organic mercurials tried (610). Flachs (128) recommended a protective spray

with copper-containing fungicides on seedlings. Flanderkova observed phytotoxicity to poppy with all organic tin fungicides tried, with Cuprosan Super D, Morestan, the decafentins, and Dithane M-45. The best fungitoxic effect was obtained from Polyram Combi and Polyram Ultra (132). The antibiotic, Fytostrep was not phytotoxic but Fytostrep plus $CuSO_4$ was. Fungicidin plus actidione at 0.05 g/ℓ improved the health condition of poppies, but dosages in excess of this reduced yield (131).

Downy Mildew or False Mildew

Taxonomy

Peronospora arborescens (Berk.) de By., 1863 (34, 99).
Syn.: *Botrytis arborescens* Berk., 1846.
Botrytis grisea Ung., 1847 (220).
Peronospora arborescens (Berk.) de By. f. *papaveris somniferi* Gaum., 1923 (145, 220).
Peronospora effusa Rab. var. *papaveris* Desm., (145, 220).
Peronospora effusa Rab. f. *papaveris* Fckl., 1863 (34, 145).
Peronospora grisea b *minor* Casp., *in* Rab., 1856 (34, 99).
Peronospora papaveris Tul., 1856 (34, 99, 220, 471).

Distribution

Peronospora arborescens is nearly world-wide in distribution and occurs on most species of *Papaver* and on species of *Argemone, Chelidonium,* and *Meconopsis.*

Symptoms

Heading plants exhibit bleaching in definite areas of the upper surfaces of the leaves, tumors, in-curling of leaf margins, intumescences, and bending of the stem, as well as deformation of flower buds and capsules. A gray-violet furry growth develops on the under surface of leaves and infected parts of the stem after exposure to dew or rain. Irregular, brown angular spots, usually bounded by the veins occur primarily on the lower leaves of older plants. These spots can cause an early drying of leaves; in this case mold formation seldom occurs (379, 395). Characteristically lower leaves are infected first and infection gradually moves to the upper leaves. Top leaves may remain quite healthy for sometime after the lower leaves are dry (219).

Description

Conidiophores emerge in groups of 5 to 6 from stomata on abaxial leaf surfaces and are 7 to 10 times dichotomously branched. Terminal branches are attached at an angle of 90° or more. Oospores are enveloped in a brown, weakly plicated exospore (33, 354). Aerial tissues of diseased plants may contain oospores and they may occur in a homothallic mycelium (26). Measurements of spores and fruiting structures made by various investigators are presented in table 2.

Epiphytology

Fungus mycelium in the endosperm can initiate infection of seedlings and can account for initiation of infection in the spring in some instances. Cotton (89) holds that the fungus was brought to Britain in infected seed material. Even if not present in seed itself, fragments of infected capsules in the seed lot can harbor the fungus (94, 220, 394). Oospores in capsules and seeds transmit the disease (417). Physiological races are postulated (26, 27, 145, 395, 524). Definite differences in susceptibility were observed in the varieties of oil poppy grown in the Danube lowlands of lower Austria in 1927 (395). The minimum temperature for germination of conidia is 4° to 7° C, optimum 17° to 18° and maximum 25° to 26° C. Incubation period in April and May at 12° to 14° C was 4 to 5 days (78, 220). Germination occurred on leaves at 44 to 56 percent relative humidity, but not on glass slides at this relative humidity. It occurred on glass slides only when spores were in contact with water (220).

Downy mildew appears in India about mid-February when the crop is maturing (78).

In Serbia in 1927 attacked plants were dry before time for incision. Attack began in early May and a month later the lower leaves were completely dry (219). Downy mildew often appears before winter in fall-sown plants. Those infected in the cotyledonary stage are usually killed. New infections occur during the whole period of growth, all aerial parts are equally susceptible. When the growing point is infected, the disease becomes systemic and subsequently formed leaves are infected (220). It has been shown that ultraviolet light in nature kills conidia in about 2 hours on a clear day and is regarded as a factor in epiphytology (106). Leaf spots appear in 6 to 9 weeks of sowing. Conidia germinate in 2 hours in free water. Attempts made by Behr (26) to germinate oospores were futile so he concluded that oospores play no role in epiphytology. That this was an unwarranted conclusion can be confirmed by many who have tried to induce oospore germination in this and related fungi. Kothari and Prasad (259) contend that oospores provide the main source for recurrence of the disease. If they are buried at an inch depth in soil before sowing they cause infection in seedlings. They are infective in the season following their formation and do not remain viable beyond 3 years.

TABLE 2.--*Measurements of spores and fruiting structures of Peronospora arborescens made by various investigators*

Investigator	Conidia	Conidiophores	Oogonia	Oospores
Berlese (34)	20-24x16-20 μ	10-12x300-850 μ	-	30-34 μ
Butler (71)	20-25x18-22 μ	10-12xca 1000 μ	32	21-32
Chattopadhyay (78)	-	-	33	22-23
Darpoux (94)	23.2x20.8 extremes 25x23 and 18x17	500 μ	-	-
DeBary (99)	13-13.1	-	-	-
Flachs (128)	16 μ	700-850 μ	-	-
Josifovic (220) (Yossifovitch)	oval 13-26x11-19.5 av. 18.7x16.3 elliptical 16-29x14-21 av. 23.3x16.3	-	- 30.5-53 mostly 37-41	- 23-39 24-26
Lindquist (282)	13-24x12-22	550-600x14-16	-	-
Losa Espana (287)	22x19	240	-	-
Montoro Guarch (346)	22-24x16-20	-	-	25-19.6
Mraz, et al. (354)	16	850	-	23-29 mostly 24-26
Noumov (Naomoff) (366)	12-30x13-17	10-12x300-850	40-60	30-38

Wild *Papaver* species are a factor in epiphytology (418). Studies in Poland in 1953, 1954, and 1955 revealed that infections were highest in the spring and fall and were favored by the high humidities and low temperatures of these months (417). Concentrations of alanine, leucine, phenylalanine, norleucine, glutamic acid, proline, methionine, tryptophane and tyrosine were lower in diseased than in healthy leaves (513).

In general, greatest damage is through killing of seedlings and sometimes of older plants. Reduction of yields of seed per capsule occur with a concomitant reduction of germination capacity (417). Damage can be appreciable but is dependent upon environmental conditions and host varieties. The most serious disease of poppy in India is downy mildew (20). Cool, rainy weather at seed germination results in extensive damage by *P. arborescens* in Germany (26, 27). In years of serious infestation opium production has been reduced by 50 to 60 percent (46). State Farms Liscwo near Malbroc, in Poland experienced a 60 to 70 percent destruction of plants at beginning of blooming over a 5 hectare area in 1953 (417). In Egypt *P. arborescens* attacks when plants are almost fully grown and lower leaves are damaged most (57). In 1871 losses in yield in India amounted to 30 to 40 percent.

Mildew occurs in a mild form throughout the chief opium-growing tract in Bihar and the east of the United Provinces every year. In many years localized attacks of greater severity, and occasionally epidemic outbreaks, have affected considerable areas. In the moist climate of lower Bengal, the ornamental varieties of *P. somniferum* suffer so much that they are not grown in the Calcutta Botanic Garden. In this area *P. rhoeas* is quite resistant (71). From one-third to two-thirds of the entire crop (and occasionally the entire crop) can be destroyed by downy mildew in Serbia and Yugoslavia (219, 220, 394).

In 1949 downy mildew caused severe damage in Austria because of high rainfall and frequent dew (508). Heavy losses of opium occurred on heavy, swampy land in Iran in 1970, but there were only traces of disease on well-drained soil (505). Downy mildew reduced opium yields 5 to 20 percent and seed yields by 50 to 70 percent in Russia in 1961 (621). There was little damage from it in Germany in 1898 (243). In India it accounts for considerable loss in seed and opium yield (257). Downy mildew is regarded as a serious pest in Austria (427), the Netherlands (418), Poland (417), and India (103).

Control

Dithane Z-78 at 0.4 percent applied as a drench to the soil before sowing checked infection by oospores (256). Using clean seed from healthy plants, rogueing of infected plants, burning debris of the infected crop, covering debris by deep ploughing, and rotating poppy every 3 years have been recommended (89, 94, 220, 239, 259, 394, 395, 417, 427). Destroy *Argemone*

mexicana L. in fields near cultivated poppies and spray with 0.3 percent Blitox-50 or with Dithane Z-78 (308). Timely spraying with "Bayer"-mixture, 1 percent copper oxychloride, was recommended in Bavaria (128). Avoid moist areas and dense stands (379, 394, 395, 417). Resistant varieties occur and can be used to reduce losses (103), e.g., infection varied from 15 percent on Burgenland to 60 to 70 percent on Esterhaza in Austria in 1927 (427).

Gray-Mold Blight

Taxonomy

Botryotinia fuckeliana (de By.) Whetzel, 1945 (354).
Peziza fuckeliana de By., 1866.
Sclerotinia fuckeliana (de By.) Fckl., 1869.
Imperfect state: *Botrytis cinerea* Pers. ex Fr., 1821 (121).

Distribution and Hosts

Although the fungus is cosmopolitan, reports of gray-mold blight upon members of the Papaveraceae are quite rare. It has been noted on these hots in Eurasia, United States, and New Zealand.

Symptoms

In cool, humid weather gray mold may appear on leaves, stems, flowers, and fruits. Buds and capsules may abort. It affects all growth stages. Seedlings may damp-off. Spots on stems, capsules, and leaves become dry. Infection often begins at a leaf axil and proceeds up the peduncle. Sepals become black, capsules may be deformed (354).

Description

Colonies gray or grayish brown. Production, sizes, and shapes of sclerotia on natural substrata and in culture are extremely variable. In culture some strains form no sclerotia; in others they are abundant. Sclerotia are black, usually smaller and thinner than those of *Whetzelinia sclerotiorum* Korf and Dumont. Conidiophores frequently 2 mm or more long, mostly 16 to 30 µ thick, branched, often with a stipe and a rather open head of branches, smooth, clear brown below, paler near the apex, with the ends of the branches often colorless. Conidia ellipsoid or obovoid, often with a slightly protruding hilum, colorless to pale brown, smooth, 6 to 18 x 4 to 4-11 µ (mostly 8 to 14 x 6-9 µ). Attacks many species of plant (121).

Economic Importance

Gray-mold blight is a weak parasite on members of the Papaveraceae and is only important during cool, damp weather when plants are nearing bloom.

Powdery Mildew

Two species of *Erysiphe* are of importance on Papaveraceae.

Taxonomy

Erysiphe cichoracearum DC. ex Merat, 1821. (Kapoor, 1967).
Erysiphe compositarum Duby, 1830.
Erysiphe scorzonerae Cast., 1845.
Erysiphe lamprocarpa Lev., 1851.
Erysiphe martii Lev., 1851.
Erysiphe tabaci Saw., 1928 (500).

Distribution and Hosts

Occurs in Europe, Formosa, Japan, and the United States mostly on *P. somniferum* but occasionally on *Chelidonium*, *Eschscholtzia*, *Meconopsis*, and a few other species of *Papaver*.

Symptoms

Mycelium and conidiophores form a white deposit on adaxial and abaxial leaf surfaces, stems, and capsules. Dark cleistothecia present in late summer and fall on infected areas.

Description

Conidia in long chains, ellipsoid to barrel-shaped, variable in size, 25 to 36 x 13 to 19 μ; cleistothecia cinnamon brown, 95 to 151 μ; asci 38 to 60 x 25 to 28 μ. Appendages of fruiting bodies basally inserted mycelioid, interwoven with mycelium, hyaline to dark brown, 1 to 4 times as long as diameter of ascocarp, rarely branched. Asci 10 to 15/cleistothecium; ascospores 2 per ascus 20 to 30 x 12 to 18 μ (63, 157).

Economic Importance

Powdery mildew is not too important in the field in most areas although it is destructive in the greenhouse if controls are not applied.

Control

New mildewcides are effective applied at manufacturer's directions.

Taxonomy

Erysiphe polygoni (DC.) Salm., 1900.

Distribution and Hosts

Hosts similar to those for above species. Occurs in Far East, Middle East, South America, and the United States.

Symptoms

White powdery spots on aerial parts of host (128, 609). Stunting and distortion of leaves occurs with some necrosis of invaded tissues. Plants attacked at all stages of maturity (482).

Description

Amphigenous, mycelium effuse and arachnoid; cleistothecia small, 65 to 180 μ; appendages variable in number and length, brown or hyaline. Asci 4 to 8 spherical to pear-shaped, 54 to 60 x 10 to 34 μ, contain 4 to 8 elliptical ascospores 18 to 24 x 9 to 15 μ (128).

Epiphytology

Since conidia germinate rapidly, powdery mildew spreads unusually fast. Perithecia carry the fungus over the winter (128). In India the disease appears in February and continues until April. It develops between 20° and 30° C and is favored by shade. It tolerates low humidities and conidia will germinate at humidities from 0 to 100 percent. Internal water content of conidia is high. Light and darkness did not affect germination (262). It is particularly prevalent at higher elevations in India during damp, hot weather (78).

Economic Importance

E. polygoni is a serious parasite of opium poppy in India. Considerable loss is regularly suffered there in seed and narcotic yield (257).

Control

Destruction of weed hosts and application of chemical sprays (257, 262). One percent Solbar, a sulfur fungicide, was suggested by Flachs (128) before the advent of the newer mildewcides.

Taxonomy

Alternaria brassicae (Berk.) Sacc., 1880.
Macrosporium brassicae Berk. *in* Hooker, 1836.
Alternaria brassicae (Berk.) Sacc. var. *somniferi* Briard & Har. 1891 (53)
Macrosporium papaveris Bres., 1915.
Macrosporium somniferi Garbowski, 1918.
Macrosporium papaveris Parisi, 1921.
Macrosporium bresadolae Parisi, 1924.
Alternaria somniferi (Briard & Har.) Saw., 1958 (503).
Alternaria papaveris-somniferi Saw., 1959 (504).
Alternaria brunnea Saw., 1959 (504).

Distribution and Hosts

Chiefly on *P. somniferum* in Europe, Japan, and Taiwan.

Symptoms

Spotting of capsules and black; velvety-moldy lesions on leaves and flowers.

Description

Hyphae short, torulose, fasciculate, dense, 30 to 40 x 6 to 7 μ, brown, 1 to 2 septate; conidia oblong-clavate, tip subacute, 5 to 9 septate, constricted, more or less divided into compartments by longitudinal septae. Pale olivaceous, 52 to 80 x 14 to 20 μ, long-pedicellate (53).

Economic Importance

Mildly pathogenic and in general does not cause much damage. Metabolic products from this fungus have been reported to cause precocious germination of seed of *P. somniferum* at Greifswald, Germany (166).

Leaf Smut

Taxonomy

Entyloma fuscum Schroet., 1877.
Ref.: Beitr. Biol. Pflanz. (Cohn) 2: 349-385.
Sny.: *Entyloma fuscellum* Rab., 1878.
Entyloma bicolor Zopf.
Entyloma bicolor Rab., 1878.
Entyloma glaucii Dang., 1894.

Distribution and Hosts

Nearly worldwide in occurrence and chiefly found upon *P. rhoeas* and *P. somniferum* but occasionally reported upon other species of *Papaver*.

Symptoms

Pale spots (3 x 6 to 10 mm) appear on the leaves in July and August in Europe. The spots become brown and then black (128). A yellow faded area surrounds the blemish on leaves of *P. somniferum* (82).

Description

Chlamydospores (2 to 6 x 11 to 23 μ) form within the tissues within a 2 to 6 μ thick light-brown membrane. They germinate in place and a promycelium emerges through stomata. On the promycelia hyaline, fusiform sporidia (20 to 22 x 3 μ) are formed (128). Chalydospores are maroon-brown (82). No clean-cut morphological differences could be seen when the fungus was compared on *P. rhoeas*, *P. dubium*, and *P. somniferum* (82).

Epiphytology

Sporidia are readily disseminated by wind and splashing rain (82, 128).

Economic Importance

Leaf smut is not seen too frequently in Europe, therefore is not of much economic importance there (82). A problem in Hungary (128), leaf smut is also considered an important disease in Argentina (315).

Control

Crop rotation has been recommended (128).

Miscellaneous Fungi Reported upon Papaveraceae

In addition to the more important fungi that attack members of the Papaveraceae, there are many species that are of relatively minor importance upon these hosts and a number of saprophytes have also been found on them. Some of the latter have been observed on the latex. These miscellaneous fungi are listed in Appendix B with the pertinent references to them in the bibliography.

BACTERIAL DISEASES OF PAPAVERACEAE

Bacterial Blight of Opium Poppy

Taxonomy

Erwinia aroidea (Town.) Holland, 1920. Jour. Bact. 5: 222.
- Syn.: *Bacillus aroidea* Townsend, 1904. U.S.D.A., Bur. Plant Ind. Bul. 60: 40 (117).
  - *Bacterium aroideae* Stapp, 1928.
  - *Pectobacterium aroideae* Waldee, 1945.
  - Probably syn.:
    - *Erwinia croci* (Mizusawa) Magrou, 1921.
    - *Bacillus croci* Mizusawa, 1923.
    - *Erwinia melonis* (Giddings) Holland, 1920.
    - *Bacillus melonis* Giddings, 1910.
    - *Pectobacterium melonis* Waldee, 1945.
    - *Erwinia papaveris* Christoff (Khristov), 1932.
    - *Bacterium papaverum* (Khristov) Christoff Burgv., 1935.
    - *Erwinia papaveris* (Ram Ayyar) Magrou.
    - *Bacillus papaveris* Ram Ayyar (175, 438).
    - *Bacterium papaveris* (Ram Ayyar) Burgv. 1935 (78, 117, 175).
    - *Bacillus* (*Erwinia*) *papaveris* Khristov, 1933 (237).

Distribution

Europe and Asia.

Symptoms

Dark-brown to black-brown spots on aerial parts (237) with a purplish tinge to lesions on *P. alpinum* and on *P. orientale* (21). Blackens stem and midribs of leaves in early stages; complete rotting in later stages; exudate from lesions viscous (175). When severe, leaves become dry (237).

Description

Aerobic rods 0.4 to 0.6 μ x 1 to 3.3 μ; gram negative; 1 to 10 peritrichous flagella; single, frequently in pairs, rarely in filaments; optimum growth at 29° C, min. 6 and none at 50°; gas not produced from sugars; liquefies gelatin; no indole; acid from dextrose and sucrose (Bergey's Manual, 1957) (21); milk clears slowly without coagulation and turns brown (237). *E. aroidea* shows both pectin glycosidase and pectin methyl esterase activity (528). No qualitative differences were found in the pectic enzymes produced by the soft rot bacteria (529). Separated from *E. carotovora* to which it is closely related by serological reactions and action on maltose and xylose. *E. aroidea* does not form gas on these.

Economic Importance

Bacterial blight caused enough damage to attract attention in Formosa in 1940 (311). Regarded as of economic interest in Bulgaria (21, 237) and in India (71, 78).

Epiphytology

The bacteria are viable on seeds for 20 months (21). They enter through the stomata and are seedborne (128). Spread is rapid (237). First symptoms appear at start of bud formation. Biting and sucking insects are instrumental in transmission (461).

Control

Sanitation, crop rotation, and timely application of insecticides to prevent dissemination (128, 226, 461).

Stalk Bacteriosis of Poppy or Soft Rot

Taxonomy

Erwinia carotovora (Jones) Holl., 1920.
Syn.: *Bacillus carotovorus* Jones, 1901.
Bacterium carotovorum Lehman & Newman, 1927.
Pectobacterium carotovorum Waldee, 1945.

Distribution

Probably cosmopolitan but few reports on poppy. Europe (354).

Symptoms

Bacterial blight may appear in rosette stage in May. Aerial fleshy plant parts including leaf veins become violet. If infection occurs at bud stage, tips wilt in 2 to 3 days. Plants infected at an early stage decompose more rapidly than those infected at a later growth stage. Finally plants collapse and become brown and dry (354). Older plants may not collapse but die prematurely.

The most striking signs of stem bacteriosis are the flaccid, drooping leaves. The pith turns black-violet and is partly consumed (354).

Description

Rods 0.7 to 0.8 x 1.5 to 5.0 μ; occasionally in filaments, peritrichous flagella; gram negative; gelatin liquefied; no indole; no H_2S; acid and gas from sugar media; facultative anaerobe; opt. 25° to 30°, minimum 4°, maximum 38° to 39° C, thermal death point 51° C (Bergey's 1957, 7th ed, p. 355-356).

Economic Importance

Bacterial blight has caused losses in Europe in some seasons (354).

Epiphytology

Transmitted by the hop bug (*Calocoris norvegicus* (Gmll.). Disease spreads in all directions from infection site. Favored by high field temperatures (354).

Leaf Spot Bacteriosis of Poppy

Taxonomy

Xanthomonas papavericola (Bryan and McWhorter) Dowson, 1939 (65).
Syn.: *Bacterium papavericola* Bryan and McWhorter, 1930 (65).
Phytomonas papavericola Bergey et al., 1957.

Distribution

Europe and Asia. Found on *Meconopsis argemone, M. bayleii, P. orientale, P. rhoeas,* and *P. somniferum.*

Symptoms

Irregular, light-colored water-soaked spots that later become yellowish and finally transparent; spots are 1 to 6 x 4 mm surrounded by necrotic zone on aerial parts. Isolated spots are larger, up to 10 mm. If numerous, the spots may merge and the leaf dries. May defoliate with abundant precipitation and warmth. If severe, may kill plants. Can become systemic by entering vascular tissue through hydathodes (516). Black lesions form on aerial parts of *P. rhoeas* and *P. orientale* (562). Seedborne if systemic (236). In *P. somniferum* infection is restricted to the leaves (461).

Description

Rods 0.6 to 0.7 x 1.0 to 1.9 μ; filaments; monotrichous; encapsulated, gram negative; indole negative; acid but no gas from levulose, glucose, galactose, fructose, sucrose, lactose, maltose, glycerol, and mannitol; gelatin liquefied; H_2S formed; agar colonies yellow; optimum temperatures 25° to 30°, maximum 35° C (Bergey's Manual, 1957); opt. pH 6.9 to 7.6; viable 20 months in dried material (65). Thermal death point 52 (116, 516). Cross agglutination reactions place it in the "vascularum group of the Xanthomonads (122). Nutrition (528, 529, 536).

Economic Importance

Leaf spot resulted in premature defoliation in Romania in the humid 1964 season (516). Considerable damage sometimes caused by it in Bulgaria (236). With sufficient moisture and temperature the whole stand may be affected and yield is reduced (361).

Epiphytology

Bacteria are splashed from the soil to lower leaves by rain or are carried on wind-blown soil particles to leaves. Further spread is effected by plant contact, showers, and insects (461). Bacteria enter through stomata and hydathodes. First symptoms appear in early June in Romania. The attack intensifies in years when precipitation is abundant in June and July, e.g., in 1964 it caused premature defoliation. First infections are through stomata. If bacteria enter the vascular system, the disease becomes systemic. The bacteria are seedborne (236, 516). Bacteria may remain viable in plant debris as long as 20 months (516). When bacteria were injected into the stem some necrosis occurred within a few centimeter of the rupture but a soft rot was never observed (461).

Control

Sanitation, rotation, and application of protective foliar antibiotics (516).

A Bacterial Disease of Shirley Poppy

Taxonomy

Pseudomonas papaveris Lelliott and Wallace, 1955.
Ref.: Lelliott, R. A., and Maud M. Wallace, 1955 (278).

Distribution

Tanganyika (278) and India (523).

Symptoms

Similar to those incited by *Erwinia aroidea*. Sometimes first symptom is purplish-black stem discoloration at or near soil level, turning black and spreading upwards to branch tips, involving either the whole stem or initially one side only. Foliage wilts, turns yellow and then brown with veins appearing as black lines, and finally disintegrates into a malodorous slimy mass. Alternatively, black spots appear in leaf veins or blades or on the lateral branches well above soil level, either spreading to kill the plant or remaining localized. Plants are attacked at all ages, well-grown plants being killed outright in a week or two or even within a few days. Symptoms appeared within 48 hours after inoculation (278).

Description

The pathogen belongs in the green-fluorescent species of the genus. Non-lipolytic, gram negative, rod 2 x 0.4 μ average; aerobic; motile by 1 to several flagella. Gelatin not liquefied; neither nitrite, indole, nor H_2S produced, starch partly hydrolyzed; acid from xylose, dextrose, mannose, glycerol, maltose, and lactose but not from rhamnose, sucrose, raffinose, or salicin. Litmus is reduced. Optimum temperature 25° to 30° C; maximum 35°, thermal death point 49° to 50° C after 10 minutes (278).

Economic Importance

Causes damage in plantings of Shirley and oriental poppy in India (523) and of Shirley poppy in Tanganyika (278).

Epiphytology

Bacterial disease appears in plantings in India in February (523) and in Tanganyika in July, August, and September (278). Insects could be a factor in spread.

Control

Antibiotics, streptomycin, and agrimycin inhibited growth of the pathogen in vitro but were not field tested (523).

VIRUS DISEASES OF PAPAVERACEAE

Anemone Mosaci Virus (192)

Similar to viruses placed in the turnip group and serologically related to the cabbage black ringspot virus, although anemone mosaic virus infection did not protect against infection with cabbage black ringspot virus.

Distribution

Of 90 plant species, 47 were experimentally infected in England (192).

Symptoms

On *P. somniferum* slight loss of bloom and reduction of vigor at 18° C; severe dwarfing and faint systemic dark brown necrotic specks, streaks, and rings on larger leaves, when grown at 8° to 10° C. Flowers severely distorted, bleached, and often showing color breaking. *P. rhoeas* was usually a symptomless carrier but a few plants showed slight leaf chlorosis (192).

Transmission

Mechanically and by four of six aphid species tested (192).

Characteristics of the Virus

Thermal inactivation below 62° C; at 18° C inactivated in less than 72 hours; dilution end-point less than 1/2,500 (192).

Economic Importance

For *P. somniferum* damage appreciable when host at 10° C and below.

Aster Yellows (266, 267)

P. nudicaule experimentally infected was severely stunted and chlorotic. The leaf-hopper, *Cicadula sexnotata* (Fall.) transmitted the causal agent from aster (267).

Sugar Beet Yellows (29)

Sugar beet yellows was experimentally transmitted to *Eschscholtzia californica* Cham. in the United States (29) and to *P. somniferum* in Europe (83). Infected plants showed yellowing and stunting and reduced seed yield. It was transmitted by *Myzus persicae*. Discrepancies in results of tests on beet yellows virus in opium poppy may be due in part to differences in clones of *M. persicae* (464).

Active strains can eliminate seed production in poppies in the greenhouse. In the field seed yield was reduced 20 percent and seed quality suffered (83). It is possible that a 50 percent decrease in yield of poppy seed in the Netherlands was caused by a strain of sugar beet yellows virus (291). Proper timing in application of systemic insecticides to kill the vector can largely obviate the damage (83).

Cabbage Black Ring-spot Virus (322)

Occurs in South Africa on *P. nudicaule*, *P. rhoeas*, and *P. somniferum*. Mild in crucifers (cape forget-me-not and endive); moderately severe in stock (*Matthiola incana*); severe in *P. rhoeas* and *P. nudicaule*.

A severe lethal disease is developed in *P. somniferum*. It is the most sensitive of natural hosts to the disease. A short chlorotic phase may mark the start of infection, with one or two immature leaves showing vein-clearing and some chlorotic spots along the veins. This is followed almost immediately by a lethal systemic necrosis of the younger leaves. The necrosis starts with a blackening of the fine veins and the appearance of some purplish black rings towards the ends of the lobes, outside the zone of blackened veins. Interveinal areas turn black and become dry as though scorched by fire, and the leaf collapses. With the rapid spread of necrosis throughout the plant, the disease is soon fatal. Experimentally infected plants usually succumbed within 3 to 4 weeks (322).

Local lesions formed on *Nicotiana glutinosa*, *N. sylvestris*, and *N. tabacum*. Growth was not seriously checked and infection was mild. *Datura stramonium* was mostly resistant but one collection was susceptible. *Datura metel* was susceptible; petunia exhibited a systemic reaction--no local lesions; spinach developed mild to severe systemic infection. *Amaranthus tricolor* and *A. caudatus* had local necrotic lesions, no systemic infection. Wallflower (*Cheiranthus cheiri*) was systemically diseased. Radish (*Raphanus sativus*) had localized infections (322).

Mechanical transmission was successful and *Brevicoryne brassicae* and *Myzus persicae* (Sulz.) were nonpersistent vectors (173).

The virus was viable in expressed sap at 20° to 25° C for 24 to 48 hours; tolerant of 1/1,000 dilution (113); thermal inactivation point (10') was near 60° C (173). Cabbage black ring-spot virus resembles turnip virus 1 and turnip mosaic virus (173).

This virus is lethal to *P. somniferum* and causes a serious disease in *P. nudicaule* and *P. rhoeas*. It is moderately severe in stock (*Matthiola incana*). Young turnip plants are sometimes killed and older plants are much stunted. On other hosts tested little damage resulted (173).

Datura 437 Virus (93A)

In March 1969 Dr. Kahn at the Plant Introduction Station, Glen Dale, Md., isolated a virus from a tree *Datura* from Colombia. Tobacco and *P. somniferum* were among the susceptible hots tried. *P. orientale*, *P. nudicaule*, and *Eschscholtzia californica* were not susceptible.

On *P. somniferum* chlorosis and stunting were followed by rapid death of the plants at temperatures of 25° to 30° C. Only 2 entries out of 84 representing 58 species from the World Tobacco Collection were resistant (93A).

The virus belongs in the potato Y virus group based upon particle size and length, pinwheel inclusions, and transmission characteristics. It was transmitted mechanically and inefficiently by *Myzus persicae* (Sulz.). It was not transmitted through seed, soil, or dodder. The particles are long, flexuous rods averaging 720-729 nm. In plant sap TIP is 56 to 58° C, DEP 10^{-3} to 10^{-4}, and LIV of 3 days at room temperature. It has been stored for 5 years in LN_2 in infected leaf pieces without loss of virulence.

Mosaic of Opium Poppy (Beet Mosaic Virus) (460, 506, 507)

Found in Europe on *P. somniferum* (507, 354); *Argemone intermedia* Sweet., *A. mexicana* L., *A. platyceras* Link and Otto, and *P. rhoeas* L. (506).

Diseased plants are retarded; internodes shortened near the top and leaves crowded. Leaves at first show mottling; later yellowing. Eventually only veins and adjacent tissue remain green. The stiff leaves impart a broom-shaped appearance to the plant. Capsules are almost uniformly high and are smaller than healthy ones. Seed fail to develop in the smaller capsules and become reddish-brown dust. In plants infected late in the season, seed germinability is reduced. The beet mosaic virus is not seed-borne (354).

Doralis fabae (Scop.) and *Myzus persicae* (Sulz.) are vectors (179).

Control measures include sanitation, crop rotation, and control of insect vectors (139).

Pelargonium Leaf Curl Virus (193)

This virus multiplied symptomlessly in *P. somniferum*.

Bean Yellow Mosaic Virus (*Phaseolus* Virus 2) (263, 264)

Found on *P. somniferum* in Bulgaria (263, 264). Chlorotic areas on leaves first as irregular bands along veins, later spreading often to all of interveinal areas leaving green stripes along veins; stunting. Fruits show green areas of normal turgor mixed with yellow sunken portions and yield little seed (263, 264).

Transmitted mechanically and by *Doralis* (Aphis) *fabae* (Scop.) from bean and broad bean to poppy and vice versa. Causes reduction in seed yield (263, 264).

Yellowing Virus of Poppy (460)

Found in Europe on *P. somniferum* (139, 354, 460). Leaf edges are yellow; lamina green; plants are stunted. Peduncles are elongated and often wavy; capsules are long and lopsided. Capsule partitions show yellow green to bright yellow striping, often accompanied by red-brown flecks. Seed densely crowded on swollen placentae, sometimes causing capsule walls to split. Large capsules may produce a small yield of inferior quality seed; small late capsules are barren. The dried, shriveled, and rust-colored seed are tightly bound to placentae. The reddish-brown seed of lightly infected plants are easily distinguished from healthy seed (139, 354). The disease appears annually and sporadically in all poppy fields in Europe (354).

NEMATODES REPORTED UPON POPPY

The nematodes associated with Papaveraceae have not been studied adequately. Prior to Zyubin's (622) checklist of 55 species found in Kirgizia, the following species were reported:

Heterodera[3/] *marioni* on *P.* spp. in the United States (68); *P. orientale* in Italy (74); *P. nudicaule* in Australia (378); *P. somniferum* in Israel (448).

Heterodera[3/] *radicicola* on *P. rhoeas* in the United States (36).

Heterodera schachtii Schmidt on *P. rhoeas* in the United States (88); on *P. somniferum* in Czechoslovakia (512) and in Germany (242).

Meloidogyne sp. on *P. somniferum* in Israel (335).

Meloidogyne arenaria on *P. rhoeas* and *P. nudicaule* in Rhodesia and Nyasaland (302).

[3/] These species now included in *Meloidogyne*.

BIBLIOGRAPHY[4/]

(1) Anonymous.
1914. Chief inquiries received at the Central Phytopathological Station during 1913. [Transl. from Russ.] Zhur. Bolezni Rast. 8: 89-107. 464.8 Z6.

Peronospora arborescens on *P. somniferum*, p. 97.

(2) ______
1941. Enfermedades y plagas principles agricultura de la Uruguaya. [Principal diseases and pests of agricultural plants in Uruguay.] Uruguay Dir. de Agron. Pub. 55: 1-19. 9.9 Ur84.

Peronospora arborescens on *P. somniferum*, p. 3.

(3) ______
1950. Diseases of poppy. N.S. Wales Agr. Gaz. 61: 465-466. 23 N472.

Peronospora arborescens, *Phytophthora cryptogea*, and spotted wilt of tomato on *P. nudicaule*.

(4) ______
1950. Plant disease survey for the twelve months ending 30th June, 1950. N.S. Wales Dept. Agr., Biol. Br., Div. Sci. Ser. Ann. Rpt. 20, 60 pp. 1 map. 464.9 N47P.

Tomato spotted wilt and *Peronospora arborescens* on *P. nudicaule*.

(5) ______
1954. Tomato diseases. Part II. Diseases of leaves, stems, and fruit. Tasmanian Jour. Agr. 25: 134-142, illus. 23 T182T.

Tomato spotted wilt virus on *P. nudicaule*, p. 135.

(6) ______
1959. A list of plant diseases recorded in Tasmania. Tasmanian Dept. Agr. Res. Bul. 2, 37 pp. 1 map. 23 T18R.

Tomato spotted wilt and *Phytophthora cryptogea* on *P. nudicaule*.

[4/] *P.* indicates *Papaver;* RAM, Rev. Appl. Mycol.; and L. C., Library of Congress. After the citations the call numbers for the National Agricultural Library are given unless otherwise designated.

(7) ______
1960. A list of plant diseases recorded in Tasmania. Sup. 1. Tasmanian Jour. Agr. 31: 357-359. 23 T182T.

Erysiphe polygoni on *P. nudicaule*, p. 358.

(8) Ahmad, S.
1956. Fungi of West Pakistan. Pakistan Biol. Soc. Monog. 1, 126 pp. 1 map. 442.9 B526.

Peronospora arborescens on *P. somniferum* and *P. rhoeas*, p. 8; and *Entyloma fuscum* on *P. rhoeas*, p. 61.

(9) ______
1956. Ustilaginales of West Pakistan. Commonwealth Mycol. Inst. Papers 64, 17 pp., illus. 451 Im73M.

Entyloma fuscum on *P. rhoeas*, p. 14.

(10) Alexopoulos, C. J.
1940. Some fungi from Greece. Mycologia 32: 336-358. 450 M99.

Chaetomella atra on *P. rhoeas*, p. 354.

(11) Ali, M. A.
1963. Possibilities of cultivation of opium poppy in East Pakistan. Pakistan Agr. 14: 185-199. 22 Ag832.

Leaf crinkle, damping-off, and black ring.

(12) Alstatt, G. E.
1942. Diseases of plants reported in Texas since 1933. U.S. Agr. Res. Serv. Plant Dis. Rptr., Sup. 135, 50 pp. 1.9 P69P.

Curly top virus on *P. nudicaule* and *P. orientale*, p. 46.

(13) Anderson, J. P.
1920. Some Alaska fungi. Iowa Acad. Sci. Proc. 27: 99-108. 500 In 2.

Botrytis cinerea on *P.* spp., p. 107.

(14) Angell, H. R.
1950. Seedling blight: II. Soil in relation to seedling blight of opium poppy and peas. Austral. Jour. Agr. Res. 1: 132-140. 23 Au783.

Pythium ultimum on *P. somniferum*.

(15) ______
1951. Seedling blight: IV. Effect of source of isolates of Pythiaceae on percentage stands of poppies and peas on four steamed soils. Austral. Jour. Agr. Res. 2: 286-294. 23 Au783. RAM 31: 459.

Pythium ultimum and *P. mamillatum* on *P. somniferum.*

(16) ______
1952. Seedling blight: VI. The effect of mixtures of unsterilized soils and of reinfesting steamed soils on seedling blight of poppies and peas. Austral. Jour. Agr. Res. 3: 128-136. 23 Au783. RAM 32: 601.

Pythium ultimum and *P. mamillatum* on *P. somniferum.*

(17) ______ and Hills, K. L.
1951. Seedling blight: III. Control of seedling blight of opium poppy by liming. Austral. Inst. Agr. Sci. Jour. 17: 17-34. 23 Au783.

Pythium spp. on *P. somniferum.*

(18) Aok, K.
1939. Parasitische pilze Mazedoniens. [Parasitic fungi of Macedonia.] Hedwigia 78: 284-298. 450 H35.

Entyloma fuscum on *P. rhoeas*, p. 290.

(19) Arnaud, G., and Darpoux, H.
1945. Les maladies des plantes oleagineuses. [Diseases of oleaginous plants.] Acad. d'Agr. de France Compt. Rend. 31: 64-65. 14 P215Bc.

Helminthosporium papaveris, *Peronospora arborescens*, and *Oidium* on *P. somniferum.*

(20) Asthana, S. N.
1954. The cultivation of the opium poppy in India. United Nations Bul. Narcotics 6 (3/4): 1-10. L. C. HV5800.B8.

Peronospora arborescens, *Dactylium roseum*, *Trichoderma viride*, *Sporotrichum* sp., *Cladosporium herbarum*, *Rhizomorpha* sp., *Mucor mucedo*, *Aregma moniliforme*, and *Phelipea indica* (*Orobanchaceae*) on *P. somniferum.*

(21) Atanasoff (Atanasov), D., Dodov, D. N., Keyaehevski, I. K., and others.
1932. Parasitic fungi new for Bulgaria. III. [Transl. from Bulgar.] Sofiisk. Univ. Agron. Fakult. God. 10: 341-366. 423 B18E. RAM 11: 745.

Erwinia papaveris on *P. somniferum*, *P. orientale*, and *P. alpinum*.

(22) Baez, J. R.
1920. Criptogamas parasitas observadas en la provinci de Entre Rios, sobre las plantas cultivades. [Cryptogamic parasites observed in the province of Entre Rios, upon cultivated plants.] Buenos Aires Min. de Agr. Dir. Gen. de Ensenaza Agr. (Bol.) 87, 38 pp.

Erysiphe polygoni on *P. somniferum*, p. 15.

(23) Ballarin, C.
1950. Untersuchungen über *Helminthosporium papaveris*. [Researches on *Helminthosporium papaveris*.] Phytopath. Ztschr. 16: 399-442, illus. 464.8 P562.

(24) Barbacka, K.
1935. Helminthosporium na maku uprawnym (*Helminthosporium papaveri* K. Sawada.) [Helminthosporiosis of cultivated poppy.] Panst. Inst. Nauk, Gosp. Wiejsk. Pulawach Pamiet. 16 (1): 1-14, illus. 20.5 P19.

(25) Beaumont, A.
1953. Diseases of poppies. Gard. Chron., Ser. III, 134: 71. 80 G162.

Peronospora arborescens and *Helminthosporium papaveris* on *P. somniferum*.

(26) Behr, L.
1956. Der Fälsche Mehltau am Mohn (*Peronospora arborescens* [Berk.] de Bary). Untersuchungen zur Biologie des Erregers. [False mildew of poppy (*Peronospora arborescens* [Berk.] de By.); studies in the biology of the causal organism.] Phytopath. Ztschr. 27: 289-334, illus. 464.8 P562.

On *P. somniferum* and *P. setigerum*, p. 307.

(27) ______
1956. Der Fälsche Mehltau am Mohn (*Peronospora arborescens* [Berk.] de Bary). Untersuchungen zur Biologie des Erregers. [False mildew of poppy (*Peronospora arborescens* [Berk.] de By.); studies in the biology of the causal organism.] Kuhn-Arch. 70: 540-541. 105.8 H 15Ku. (Abridged version of previous reference.)

(28) Beltyukova (Bel'tiukova), K. I., and Lebedeva, O. P.
1935. On the specialization of *Phytomonas tabaca* Wolf and Foster on certain host plants. [Transl. from Russ.] Krasnodar Vsesoiuzn. Nauch.- Issled. Inst. Tabach. Bul. 126: 17-34. 69.9 K86. RAM 15: 750.

On *P. somniferum*, pp. 22, 27, and 34.

(29) Bennett, C. W.
1960. Sugar beet yellows disease in the United States. U.S. Dept. Agr. Tech. Bul. 1218, 63 pp. 1 Ag 84TE.

On *Eschscholtzia californica*, *P. somniferum*, and *P.* sp., p. 8.

(30) Bergstrom, I.
1942. Ett förberedande försök med betning av oljevallmo. [A preliminary disinfection test with oil poppy seed.] Sweden Stat. Vaxskyddsanst., Vaxskyddsnot. 6: 28-29. 464.9 Sw 3V.

On *Pleospora calvescens*.

(31) ______
1942. Några data från sommarens vallmoförsök. [Some data from the summers poppy trials.] Sweden Stat. Vaxtskyddsanst., Vaxtskyddsnot. 6: 91-93. 464.9 Sw 3V.

Pleospora calvescens on *P. somniferum*.

(32) Berkeley, M. J.
1846. Observations, botanical and physiological on the potato murrain. Hort. Soc. London Jour. 1: 9-34, illus. 84 L84J.

Plate 4, fig. 24, *Botrytis arborescens*, syn. of *Peronospora arborescens*, p. 31.

(33) Berlese, A. N.
1903. Saggio di una monografia della Peronosporacee. [Assay on a monograph on the *Peronosporaceae*.] Portici Premiato Stab. Tip. Vesuviano di E. Della Torre. 311 pp. 462 B45S. (See Berlese, 1904)

(34) ______
1904. Sezione di una monografia della Peronosporacee. [Section of a monograph on *Peronosporaceae*.] Riv. Patol. Veg. 10: 185-298, illus. 464.8 R52.

Peronospora arborescens on *P. somniferum*, *P. rhoeas*, *P. argemone*, and *P. dubium* in Italy, Germany, Britain, and Belgium, p. 216.

(35) Besemer, A. F. H., and Oostenbrink, M.
1955. Phytotoxische en nematicide nawerking van grondontsmettingen met DD. [Phytotoxic and nematocidal residual effects of soil sterilization with D-D.] Ghent Landbhogesch., Mededel. 20: 279-290. 105.1 G344.

Pratylenchus penetrans and *Pratylenchus* sp. on *Meconopsis* spp. and *P. somniferum*, pp. 282-283.

(36) Bessey, E. A.
1911. Root knot and its control. U.S. Dept. Agr. Bur. Plant Indus. Bul. 217, 89 pp. 1 P69B.

Heterodera radicicola on *P. rhoeas*.

(37) Blumer, S.
1926. Neue Wirtspflanzen von Mehltaupilzen. [New host plants of *Erysiphaceae*.] Ztschr. Pflanzenkr u Pflanzenschutz 36: 232-236. 464.8 Z3.

Erysiphe polygoni on *P. dubium*.

(38) Bogarada, A. P., Lyman, V. E., and Taranich, A. P.
1971. On the resistance of poppy to helminthosporiosis. [Transl. from Russ.] Selek. i Semen. 36 (2): 78-79. 61.9 Se5.

(39) Bommer, E., and Rousseau, M.
1887. Contributions a la flora mycologique de Belgique II. [Contributions to the fungus flora of Belgium II.] Belgium Roy. Soc. Bot. Bul. 26: 187-241. 451 B41B.

Entyloma fuscum on *P. rhoeas*, p. 210.

(40) Bondartseva (Bondarzew), A. S.
1903. Fungus parasites of cultivated and wild plants collected in the vicinity of Riga during the summer of 1902. [Transl. from Russ.] St. Petersburgskago Bot. Sada Izv. 3: 177-200. 451 Sa2B.

Peronospora arborescens on *P. somniferum*, pp. 184 and 188.

(41) ______
1903. Fungus parasites of cultivated and wild plants collected in the summer of 1902 in the vicinity of Riga. [Transl. from Russ.] Ztschr. Pflanzenkr. 13: 217-220. 464.8 Z3.

Peronospora arborescens on *P.* sp., p. 219.

(42) ______
1906. Plant parasites of cultivated and ornamental plants collected in the Kursk district in the summers of 1901, 1903-1905. [Transl. from Russ.] St. Petersburgskago Bot. Sada Trudy 26: 1-52. 451 Sa2A.

Peronospora arborescens on *P. somniferum*, p. 25.

(43) ______ and Serbinov, I. L.
1913. Gribnyia bolezni plodovykh'n ogorodnykh'rastenii. Chast'II. [Diseases of fruit and vegetables. V. II. Diseases of small fruit and vegetables and their control.] 108 pp. St. Petersburg. 464 G87.

Peronospora arborescens on *P. somniferum*, pp. 70-71.

(44) Bontea, V.
1953. Ciuperci parazite si saprofite din Republica Populara Romana. [Parasitic and saprophytic fungi of Romania.] 637 pp. Acad. Repub. Pop. Romane. QK 603.B6.

Peronospora arborescens on *P. rhoeas*; *Entyloma fuscum* on *P. dubium*, *P. rhoeas*, and *P. somniferum*; *Erysiphe communis* on *P. somniferum*, pp. 175-176.

(45) ______ and Elvira
1970. Attempts at separating the species of *Helminthosporium* by physico-chemical characterization of cultural extracts. Microbiologia (Bucharest) 1: 317-320, illus. QR 1.M52.

Helminthosporium papaveris on *P. somniferum*, p. 318.

(46) Boshart, K.
1934. Die Krankheiten und Schadlinge der wichtigsten Arznei und Gewurtzpflanzen. [The diseases and pests of the principal drug and spice plants.] Nachr. uber Schadlingsbekampf. 9: 57-82. 464.8 N112.

Peronospora arborescens on *P. somniferum*, p. 59.

(47) Boyd, O. C.
1948. Diseases and weather in Massachusetts. U.S. Agr. Res. Serv. Plant Dis. Rptr. 32: 348-349. 1.9 P69P.

Xanthomonas papavericola on *P. orientale*, p. 349.

(48) Bremer, H., and Gaumann, E.
1945. Zur Kenntnis einiger Kleinasiatischen *Peronospora* Arten. [A contribution to the knowledge of Asia Minor species of *Peronospora*.] Schweiz. Bot. Ges. Ber. 55: 151-153. 451 Sch 9.

Peronospora arborescens on *P. somniferum* and *P. commutatum* in Turkey, p. 151.

(49) ______ Ismen, H., Karel, G., Ozkan, H., and others.
1947. Beiträge zur Kenntnis der parasitischen Pilze der Türkei. II. [Contribution to the knowledge of the parasitic fungi of Turkey, II.] Istanbul Univ. Fakult. Sci., Rev. Ser. B 12 (4): 307-334. 475 Is 7.

Entyloma fuscum on *P. somniferum* and *P. commutatum*, p. 329.

(50) Bresadola, G.
1890. Champignons de la Hongrie, recoltes en 1886-89 par M. le Professeur V. Greschik. [Fungi of Hungary, collected in 1886-89 by Prof. V. Greschik.] Rev. Mycol. 12: 101-126. 450 R399.

Entyloma fuscum on *P. somniferum*, p. 112.

(51) ______
1891. Champignons de la Hongrie, recoltes en 1886-89 par M. le Professeur V. Greschik. [Fungi of Hungary, collected 1886-89 by Prof. V. Greschik.] Rev. Mycol. 13: 20-33. 450 R399.

Phoma melaena on *P. somniferum*, p. 26.

(52) ______
1915. Neue pilze aus Sachsen. [New fungi from Saxony.] Ann. Mycol. 13: 104-106. 450 An 76.

Macrosporium papaveris on *P. somniferum*.

(53) Briard, P. A.
1891. Champignons nouveaux. III. [New fungi. III.] Rev. Mycol. 13: 15-18. 450 R399.

Alternaria brassicae var. *somniferum* on *P. somniferum*.

(54) Brien, R. M., and Dingley, J. M.
1951. A revised list of plant diseases recorded in New Zealand. New Zeal. Dept. Sci. and Indus. Res. Bul. 101, 62 pp. 330.9 N48B.

Botrytis cinerea, Oidium sp., and tomato spotted-wilt virus on *P. nudicaule*, p. 31.

(55) ______ and Dingley, J. M.
1953. First supplement to "A revised list of plant diseases recorded in New Zealand" 1949-1951. New Zeal. Jour. Sci. and Technol., Sect. A, 34: 556-562. 514 N48A.

Verticillium dahliae on *P. nudicaule*, p. 559.

(56) ______ and Dingley, J. M.
1959. Fourth supplement to "A revised list of plant diseases recorded in New Zealand" 1957-1958. New Zeal. Jour. Agr. Res. 2: 406-413. 23 N4892.

Entyloma fuscum on *P. somniferum*, p. 409.

(57) Briton-Jones, H. R.
1925. Mycological work in Egypt during the period 1920-1922. Egypt Min. Agr. Tech. and Sci. Serv. Bul. 49: 1-129. 24 Eg 93.

Peronospora arborescens on *P. somniferum*, p. 119.

(58) Brittlebank, C. C.
1919. The Iceland poppy disease. Victoria Dept. Agr. Jour. 17: 700-701. 23 V66J.

Phytophthora sp. on *P. nudicaule*.

(59) ______ and Fish, S.
1927. A garden fungus disease. A wilt of tomatoes, Iceland poppies, and other garden plants in Victoria caused by the fungus *Phytophthora cryptogea* Pethy. and Lafferty. Victoria Dept. Agr. Jour. 25: 380-381. 23 V66J.

On *P. nudicaule*.

(60) Brook, S. D.
1957. Additions to the smut fungi of New Zealand. II. Roy. Soc. New Zeal. Trans. 84: 643-648, illus. 514 W46.

Entyloma fuscum on *P. somniferum*, p. 646.

(61) Brunaud, P.
1890. Sphaeropsidees recoltees jusqua'a ce jour dans la Charente-Inferieure. [Sphaeropsidales collected up to the present in the lower Charente basin.] Rochelle Acad. Soc. des Sci. Nat. de la Charente-Inferieure, Ann. of 1889, No. 26: 51-140. 505 L11.

Phoma striaeformis var. *hysteriola* on *P. somniferum*, p. 78.

(62) Brundza, K.
1933. Kai kurie parazitiniai grybeliai, surinkfi Liefuvoje 1927-1932 M. [A review of the parasitic fungi collected in Lithuania in 1927-1932.] Dotnava, Lithuania Zemes Ukio Akad., Metrastis 1932: 199-208. 106 D74.

Entyloma sp. on *P. dubium* and *Ascochyta* sp. on *P. somniferum*, p. 201.

(63) ______
1935. Indelis Lietuvas *Erysiphaceju* florai. [Contribution to the knowledge of the Lithuanian *Erysiphaceae.*] Dotnava, Lithuania Zemes Ukio Akad., Metrastis 9 (2): 83-99. 106 D74.

Erysiphe cichoracearum on *P. argemone* and *P. somniferum; Erysiphe communis* on *P. somniferum;* and *Oidium* sp. on *P. rhoeas*, pp. 87, 88, 92, and 99.

(64) ______
1937. Report of the Phytopathological Section of the Plant Protection Station in Lithuania for the year 1935. Dotnava, Lithuania Zemes Ukio Tyrimo Istaiges Darbai 14: 1-28. 106 D742.

Erysiphe polygoni and *Entyloma fuscum* on *P. somniferum*, p. 12.

(65) Bryan, M. K., and McWhorter, F. P.
1930. Bacterial blight of poppy caused by *Bacterium papavericola* sp. nov. Jour. Agr. Res. 40: 1-10, illus. 1 Ag 84J.

On *P. rhoeas* and *P. orientale.*

(66) Bucholtz, F.
1909. 4. Verzeichnis der bisher fur die Osteeprovinsen Russlands bekannt gewordenen Peronosporineae. Nach vorhandenen Literaturangaben und Sammlungen zusammengestelt von F. Bucholtz. [4. Catalog of the Peronosporales of the eastern provinces of Russia according to the literature and collections made by the author.] Riga (Latvia) Korrespondenzblatt Naturf., Vergh. 52: 161-172. 511 R44K.

Peronospora arborescens on *P. somniferum, P. argemone,* and *P. dubium,* p. 170.

(67) Buhr, H.
1955/56. Zur Kenntnis der Peronosporaceen Mecklenburg. [On the knowledge of the Peronosporaceae of Mecklenburg.] Mecklenburg Fr. Naturgesch. Arch. 2: 109-243. 474 AR2.

Peronospora arborescens on *P. somniferum, P. rhoeas, P. canadense, P. dubium, P. floribundum, P. nudicaule, P. "pannoicum," P. polare* Tola, and *Meconopsis betonicifolia,* pp. 113-114 and 189-190.

(68) Buhrer, E. M.
1938. Additions to the list of plants attacked by the root-knot nematode (*Heterodera marioni*). U.S. Agr. Res. Serv. Plant Dis. Rptr. 22: 216-234. 1.9 P69P.

(69) Burgvits (Burgwitz), G. K.
1935. Fitopatologennye bakterii. [Phytopathogenic bacteria.] 252 pp. Pub. Off. Acad. Sci. USSR, Leningrad. 464.2 B91.

Bacterium papaveris on *P. somniferum,* pp. 91-92.

(70) Butler, E. J.
1917. Botany. Part III - Mycology. India Sci. Advice Bd., Ann. Rpt. 1915-16: 103-113. 330.9 In2.

Peronospora arborescens and *Rhizoctonia* sp. on *P. somniferum,* pp. 106 and 112.

(71) ______
1918. Fungi and disease in plants. 547 pp., illus. Thacker, Spink & Co., Calcutta and Simla. 464.1 B97.

Peronospora arborescens on *P. somniferum, P. rhoeas,* and *Argemone mexicana; Rhizoctonia* sp. on *P. somniferum;* and bacterial soft rot on *P. somniferum,* pp. 344-346.

(72) ______ and Bisby, G. R.
1931. The fungi of India. India Imp. Council of Agr. Res., Sci. Monog. 1: 1-237, 1 map. 22 Im 72.

Erysiphe polygoni on *P. somniferum* and *Peronospora arborescens* on *P. somniferum* and *Argemone mexicana*, pp. 4 and 22.

(73) ______ and Bisby, G. R.
1960. The fungi of India (revised by R. S. Vasudeva). 552 pp. The India Imp. Council of Agr. Res., New Delhi. 462 B97.

Erysiphe cichoracearum, *E. polygoni*, *Pellicularia filamentosa*, *Peronospora arborescens*, and *Sclerotium rolfsii* on *P. somniferum*, pp. 24, 50, 151, and 277; *Oidium erysiphoides* on *P. rhoeas*, p. 247; and *Entyloma fuscum* on *P.* spp., p. 144.

(74) Calvino, E. M.
1950. I nematodi delle piante de fiore in Italia. Nota I. Mezzi di lotta. Nota II. [The nematodes of garden plants in Italy. Note I. Control measures. Note II.] Ann. della Sper. Agr. 4: 119-152. 16 An76.

Heterodera marioni on *P. orientale*, p. 122.

(75) Camara, M. de S. da
1930. Contributiones ad mycoflorum Lusitaniae. [Contributions to the mycoflora of Portugal. Centuries VIII and IX.] Lisbon Inst. Sup. de Agron., An. 3: 59-141, illus. 105.7 L682.

Macrophoma papaveris on *P. somniferum*, p. 93.

(76) Carne, W. M.
1927. Additions to the plant diseases of South Western Australia. 3. West. Austral. Roy. Soc. Jour. 14: 23-28. 514 P432.

Phytophthora sp. on *P. nudicaule*, p. 28.

(77) Chantarasrikul, A.
1968. A supplementary host list of plant diseases in Thailand. Thailand Dept. Agr. Tech. Bul. 9, 14 pp. 22.5 Si 1T.

Peronospora sp. on *P. somniferum*, p. 7.

(78) Chattopadhyay, S. B.
1967. Diseases of plants yielding drugs, dyes and spices. 100 pp., illus. Council of Agr. Res., New Delhi. SB605.14C4.

Peronospora arborescens, Macrophomina phaseoli [*Rhizoctonia bataticola*], *Bacterium papaveris, Erysiphe polygoni* on *P. somniferum,* and *P.* spp., pp. 75-80.

(79) Chidambaram, P., Mathur, S. B., and Neergaard, P.
1973. Identification of seed-borne *Drechslera* species. Friesia 10: 165-207. 450 F91.

Drechslera tetramera on *P. somniferum,* p. 182.

(80) Chorin, M., and Palti, J.
1962. *Erysiphaceae* in Israel. Israel Jour. Agr. Res. 12: 153-166. 107 J552.

E. polygoni on *P. somniferum,* p. 156.

(81) Chupp, C.
1954. A monograph of the genus *Cercospora.* 667 pp. Ithaca, N.Y. 462.82 C47.

C. papaveri and *C. papavericola* on *P. somniferum* and *C. whetzelii* on *Argemone mexicana* and *A. platyceras,* p. 430-431.

(82) Ciferri, R.
1928. Quarta contribuzione allo studio degli Ustilaginales. [Fourth contribution to the study of the Ustilaginales.] Ann. Mycol. 26: 1-68. 450 An76.

Entyloma fuscum on *P. argemone, P. somniferum, P. rhoeas,* and *P. dubium,* pp. 17-19.

(83) Cleij, G.
1961. Beet yellows in poppy. Euphytica 10 (2): 225-228, illus. 450 Eu6.

On *P. somniferum.*

(84) Clinton, G. P.
1909. Report of the Station Botanist, 1908. Conn. Agr. Expt. Sta. Rpt. 1908: 849-934. 100 C76St.

Xanthomonas papavericola on *P. rhoeas* probably, p. 870.

(85) ______
1934. Plant pest handbook for Connecticut. II. Diseases and injuries. Conn. Agr. Expt. Sta. Bul. 358: 149-329. 100 C76St.

Xanthomonas papavericola on *P.* sp. probably, *P. rhoeas* and *P. orientale*, p. 248.

(86) Conners, J. L.
1936. Diseases of ornamental plants. Canad. Plant Dis. Survey Ann. Rpt. 1935, 15: 65-74. 464.9 C16S.

Yellows on *P.* sp., p. 71.

(87) Cooke, M. C.
1902. Pests of the flower garden. [London] Roy. Hort. Soc. Jour. 27: 1-45. 84 L84J.

Peronospora arborescens on *P. somniferum* and *P.* sp., pp. 20-21.

(88) Corder, M. N., Buhrer, E. M., and Thorne, G.
1936. A list of plants attacked by the sugar beet nematode (*Heterodera schachtii* Schmidt). U.S. Agr. Res. Serv. Plant Dis. Rptr. 20: 38-47. 1.9 P69P.

On *P. rhoeas* and *P.* spp.

(89) Cotton, A. D.
1929. A fungus disease of *Meconopsis*. Gard. Chron., Ser. III, 85: 143-144. 80 G162. RAM 8: 576-577.

Peronospora arborescens on *P. somniferum*, *P. dubium*, *P. argemone*, *Meconopsis betonicifolia* f. *baileyi*, *M. cambrica*, *M. grandis*, *M. wallichii*, *M. supberba*, *M. paniculata*, *M. prattii*, *M. latifolia*, and *M. integrifolia*.

(90) Crosier, W. F., and Heit, C. E.
1964. Seed-borne fungi of anchusa, China aster, poppy and zinnia. Assoc. Off. Seed Anal. Proc. 54: 87-92. 61.9 As7.

Alternaria tenuis on *P. rhoeas*; *Dendryphion penicillatum* var. *sclerotiale* on *P.* sp.; *Helminthosporium papaveris* on *P. paeoniflorum*, *P. alpinum*, *P. musselli*, *P. nudicaule*, *P. rhoeas*, *P. somniferum*, *P. umbrosum*; *Helminthosporium* sp. on *P. rhoeas*; and *Phoma rhoeadis* on *P. nudicaule* and *P. umbrosum*.

(91) Cruchet, D.
1923. Recherches mycologiques a Montagny et aux environs d'Yverdon. II. [Mycological studies of Montagny and the vicinity of Yverdon. II.] Soc. Vaud. Sci. Nat. Bul. 55: 155-177. 508 L37.

Pleospora papaveracea and *Pyrenophora pellita* on *P. somniferum* and *P. rhoeas*, pp. 172 and 174; and *Pleospora vulgaris* and *Ophiobolus tenellus* on *P. rhoeas*, pp. 171 and 174.

(92) Cuturilo, S.
1952. Insect pests and plant diseases in the territory of the People's Republic of Serbia in 1951. Zashtita Bilja 11: 21-42. 464.8 Z1.

Peronospora arborescens on *P. somniferum* and *P.* spp., p. 33.

(93) Czyzewska, S., and Zarzycka, H.
1961. Some data on the biology of the fungus *Helminthosporium papaveris* Henn., imperfect stage of *Pleospora papaveracea* (Wint.) de Not. Acta Agrobot. 10: 41-51, illus. 450 Ac 89. RAM 42: 565.

(93A) Damsteegt, V. D.
1974. Transmission, host range, and physical properties of a virus infecting *Datura candida*. Proc. Amer. Phytopath. Soc. 1: 50.

Datura 437 virus on *P. somniferum*.

(94) Darpoux, H.
1945. Contribution a l'etude des maladies des plantes oleagineuses en France. [A contribution to the study of the diseases of oleaginous plants in France.] France Inst. des Rech. Agron., Ann. de Epiphyt., N.S., 11: 71-103, illus. 464.9 F84A.

Peronospora arborescens, *Pleospora papaveracea*, and *Erysiphe cichoracearum* on *P. somniferum*, pp. 80-86.

(95) ______
1948. Les maladies des plantes oleagineuses metropolitaines et leur traitement. [The diseases of domestic oleaginous plants and their treatment.] France Min. de l'Agr., Bul. Tech. Inform. 28/29: 193-200, illus. 14 F844B.

Helminthosporium papaveris (*Pleospora calvescens*), *Peronospora arborescens*, and *Erysiphe cichoracearum* on *P. somniferum*, p. 196.

(96) ______ and Faivre-Amiot, A.
1949. Actions antagonistes de l'Actinomycete 105 sur quelques micro-organismes pour la plupart phyto-pathogens. Essais l'application dans la lutte contre les maladies des plantes. [Antagonistic action of *Actinomycete* #105 against some microorganisms for the most part plant pathogens tested for application in control of plant diseases.] Inst. Pasteur, Ann. 76: 72-74. 448.3 An75.

Dendryphium penicillatum (*Pyrenophora calvescens*) on *P. somniferum*, p. 73.

(97) ______ and Faivre-Amiot, A.
1949. Actions antagonistes de divers micro-organismes sur les agents phytopathogens. [Antagonism of various micro-organisms toward plant pathogens.] Acad. d'Agr. de France, Compt. Rend. 35: 266-269. 14 P215 Bc.

Pyrenophora calvescens, p. 268.

(98) Dearness, J.
1923. The fungi of the Arctic coast of America west of the 100th meridian. Canadian Arctic Expedition 1913-1918. Rpt. V. 4: Botany; Part C; Fungi 1c-24c. 409 C16.

Mycosphaerella pachyasa, *Pleospora* sp., *P. herbarum*, *P. vulgaris* and *Pyrenophora pancitricha* on *P. nudicaule*, pp. 8c-11c.

(99) de Bary, A.
1863. Recherches sur le developpement de quelques champignons parasites. [Researches on the development of some parasitic fungi.] Ann. des Sci. Nat. Bot. Ser. IV, 20: 5-148.

On *Peronospora arborescens*, *P. somniferum*, and *P. rhoeas*, p. 119.

(100) Dennis, R. W. G., and Foister, C. E.
1942. List of diseases of economic plants recorded in Scotland. Brit. Mycol. Soc. Trans. 25: 266-306. 451 B76.

Mucilago spongiosa, *Phytophthora parasitica*, *P. verrucosa* and *Sclerotinia sclerotiorum* on *Meconopsis* spp. *Peronospora arborescens* on *Meconopsis* spp., *P. dubium* and *P. somniferum*, *Phytophthora cactorum* on *Meconopsis wallichi*, pp. 293, 294, and 295.

(101) Desphande, A. L., Agarwal, J. P., and Mathur, B. N.
1970. *Rhizoctonia bataticola* causing root-rot of opium in Rajasthan. Indian Phytopath. 22: 510-511, 1969(1970). 464.8 In 2.

(102) Detman, Z.
1907. Krankheiten tropischer Nutzpflanzen. [Diseases of useful tropical plants.] Zeitschr. f. Pflanzenkrank. 17: 280-281. 464.8 Z3.

Helminthosporium papaveris on *P. somniferum*, pp. 281-282.

(103) Dey, P. K.
1921. Poppy *in* Survey of diseases of crops. India Bd. Agr., Mycol. Workers Meeting, Proc. 3: 20-30. 464.9 In 2.

Peronospora arborescens on *P. somniferum*, p. 26.

(104) Dimock, A. W.
1940. Importance of *Verticillium* as a pathogen of ornamental plants. Phytopathology 30: 1054-1055. 464.8 P56.

Verticillium sp. on *P. rhoeas*, *P. orientale*, and *Eschscholtzia californica*.

(105) ______
1942. New ornamental suscepts of *Verticillium*. U.S. Agr. Res. Serv. Plant Dis. Rptr. 26: 370. 1.9 P69P.

Verticillium sp. on *P. pilosum*.

(106) Dobrovolskii, M. E.
1914. Observations on the parasitic fungi of the Podolsk government (Moscow Oblast). [Transl. from Russ.] Zhur. Bolezni Rastenii 8: 139-146. 464.8 Z6.

Peronospora arborescens on *P. somniferum*, p. 141.

(107) Docea, E., and Severin, V.
1964. Indrumator pentru recunoasterea si combaterea bolilor plantelor cultivate. [A guide to the identification and control of diseases of cultivated plants.] 368 pp., illus., Bucharest. SB731.D6.

Peronospora arborescens, *Helminthosporium papaveris*, *Entyloma fuscum*, *Xanthomonas papavericola* and *Erysiphe cichoracearum* on *P. somniferum*, pp. 98-101.

(108) Doidge, E. M.
1938. Some South African *Fusaria*. Bothalia 3: 331-483. 460.46 B65. illus.

Fusarium scirpi associated with *Rhizoctonia* and *Pythium* on *P. nudicaule*, pp. 360-361, and 463; *Fusarium scirpi* var. *compactum* associated with *Rhizoctonia* on *P. rhoeas*, pp. 364-366, and 463.

(109) ______ Bottomley, A. M., van der Plank, J. E., and Pauer, G. D.
1953. A revised list of plant diseases in South Africa. So. Africa Dept. Agr. Sci. Bul. 346, 122 pp. 24 So 84S.

Cabbage black ring spot virus on *P. somniferum*, *P. rhoeas*, and *P. nudicaule*; *Rhizoctonia* sp. on *P. rhoeas* and *P. nudicaule*; *Pythium oligandrum* on *P. rhoeas*; *Fusarium scirpi* on *P. rhoeas* and *P. nudicaule*; *Ascochyta papaveris* on *P. nudicaule*; tomato spotted wilt virus on *P. nudicaule*; *Entyloma fuscum* on *P. rhoeas*; *Heterosporium groenlandicum* *P. nudicaule*; and *Pythium ultimum* on *P. nudicaule*.

(110) Dolle, H.
1954. Über antibiotische Wirkungen von Actinomyceten des Bodens auf *Helminthosporium papaveris* Saw. [On the antibiotic effects of soil actinomycetes on *Helminthosporium papaveris* Saw.] Zentralbl. f. Bakt. Abt. II. 108: 127-133, illus. 448.3 C33. RAM 34: 320.

(111) Dowson, W. J.
1949. Manual of bacterial plant diseases. 183 pp. London. 464.2 D76.

Xanthomonas papavericola on *P. orientale*, *P.* spp., and *Argemone*, p. 122.

(112) Ducos, P.
1937. Sur quelques *Pleospora* d'Auvergne. [On some *Pleospora* of Auvergne.] Soc. Mycol. France, Bul. Trimest. 53 (2): 169-174. 451 P213.

Pleospora calvescens on *P. somniferum*, p. 170.

(113) Dyer, R. A.
1949. Botanical surveys and control of plant diseases. Farming So. Africa 24: 119-121. 24 So 842.

Cabbage black ring spot virus on *P. somniferum*, *P. rhoeas*, and *P. nudicaule*, very severe on *P. somniferum* and *P. rhoeas*, p. 121.

(114) Dzhafarov, S. A.
1960. Fungi of the order Peronosporales parasitizing agricultural crops in the Talysh. [Transl. from Russ.] Akad. Nauk Azerb. SSR., Dok. 16: 293-297. 511 Ak 147D.

Peronospora arborescens on *P. somniferum*, p. 296.

(115) Ekstrand, H.
1941. En sjukdom pa vallmo. [A disease on poppy.] Sweden Stat., Vaxskyddsant., Vaxskyddsnot. 5: 50-53. 464.9 Sw3V.

Pleospora calvescens on *P. somniferum*.

(116) Eliade, E.
1960. Contributiuni la cunoasterea bolilor din Gradina Botanica din Bucuresti. [Contributions to the knowledge of plant diseases from the Bucharest Botanical Garden.] Bucharest Univ. "C. I. Parhon" Gradina Bot., Lucraile 1959: 115-129, illus. Library, Canad. Dept. Agr., Ottawa.

Peronospora arborescens on *P. somniferum*, pp. 116 and 123.

(117) Elliott, C.
1951. Manual of bacterial plant pathogens. Ed. 2: rev. Chronica Botanica Co., Waltham, Mass. 186 pp. 450 An77.

Erwinia aroidea on *P. somniferum*, *P. rhoeas*, *P. alpinum*, and *P. orientale*, pp. 35-36.

(118) Ellis, J. B., and Everhart, B. M.
1885. Canadian fungi. Jour. Mycol. 1:85-87. 450 M99.

Pleospora herbarum on *P. nudicaule*.

(119) ______ and Everhart, B. M.
1887. New species of fungi from various localities. Jour. Mycol. 3: 127-130. 450 M99.

Gloeosporium argemonis on *Argemone platyceras*, p. 129.

(120) ______ and Everhart, B. M.
1888. New species of fungi from various localities. Jour. Mycol. 4: 44-46. 450 M99.

Alternaria lancipes on *Argemone platyceras*, p. 45.

(121) Ellis, M. B.
1971. The dematiaceous *Hyphomycetes*. 608 pp. Commonwealth Mycol. Inst., Kew. QK625.M74E42.

Dendryphion state of *Pleospora papaveracea* on *P. somniferum* and other *Papaveraceae*, pp. 504-505.

(122) Elrod, R. P., and Braun, A. C.
1947. Serological studies of the genus *Xanthomonas*. I. Cross-agglutination relationships. Jour. Bacteriol. 53: 509-518. 448.3 J82.

Xanthomonas papavericola.

(123) Engler, A., and Prantl, K.
1897. Die Naturlichen Pflanzenfamilien. [The natural families of plants.] Teil I, Abteilung I. 513 pp. Leipzig. 452 En 3N.

Pyrenophora pellita on *Papaver*, p. 440.

(124) Ettig, B.
1955. Über wechselseitige antibiotische Wirkungen zwischen *Helminthosporium papaveris* Saw. und Bodenbakterien. [On the reciprocal antibiotic effects between *Helminthosporium papaveris* Saw. and soil bacteria.] Zentralbl. Bakteriol. Hyg., Abt. II, 108: 530-535, illus. 448.3 C33. RAM 35: 43. 1956.

(125) Exell, A. W.
1931. Phyllody in *Papaver nudicaule*. Gard. Chron., Ser. III, 90: 415, illus. 80 G162.

(126) Farlow, W. G., and Seymour, A. B.
1888-1891. A provisional host-index of the fungi of the United States. 219 pp. Cambridge. 462 F22P.

Pleospora herbarum, P. papaveraceae, Physalospora polaris, and *Sphaerella arthopyrenioideis* on *P. nudicaule; Entyloma eschscholtziae, Heterosporium eschscholtziae*, and *Peziza eschscholtziae* on *Eschscholtzia californica; Gleosporium argemonis* and *Alternaria lancipes* on *Argemone platyceras;* and *Massaria cleistotheca, Pleospora argyrospora*, and *Sphaerella dendromeconis* on *Dendromecon rigidum*, pp. 6 and 185.

(127) Ferraris, T.
1915. I parassiti vegetali delle pianto coltivate od utili. [Parasitic fungi on cultivated and useful plants.] Ed. 2. 1032 pp. Milano. 464 F41.

Peronospora arborescens on *Papaver argemone, P. dubium, P. rhoeas* and *P. somniferum*, pp. 226-227.

(128) Flachs, K.
1936. Krankheiten und Schädlinge an Ölpflanzen. [Diseases and pests of oil-poppy.] Nachr. über Schädlingsbekampfung 11: 130-148, illus. 464.8 N112.

Peronospora arborescens, Erysiphe polygoni, Entyloma fuscum, Dendryphium penicillatum, Verticillium sp., *Bacillus papaveris, Fusarium scirpi* var. *caudatum, Cladosporium* sp., *Alternaria* sp. and *Pleospora calvescens* = *Helminthosporium papaveris*, pp. 138-143.

(129) Flanderková, V.
1972. Vliv ošetřeni fungicidy na napadeni máku houbou *Helminthosporium papaveris* Henning. [Effect of fungicides on infection of poppy with *Helminthosporium papaveris* Hennig.] Sborn. UVTI (Ustav Vedeckotech Inform) Ochrona Rostlin 8: 19-22. 464.8 Sb5.

(130) ______
1972. Sledováni odrůdové odolnosti máku proti helmintosporioze. [Varietal resistance of poppy against helminthosporosis.] Uroda 20: 418-419, illus. 64.8 Z12.

Helminthosporium papaveris.

(131) ______
1972. Antibiotika v ochraně porostu máku proti *Helminthosporium papaveris* Henning. [Testing the suitability of antibiotics for poppy stand protection against *H. papaveris* Henning.] Sborn. UVTI (Ustav Vedeckotech Inform) Ochrana Rostlin 8: 277-281. 464.8 Sb5.

(132) ______
1973. Dalše poznalky o ŭčinnosti fungicidu proti *Helminthosporium papaveris* Henning. [New findings concerning effectiveness of fungicides on *H. papaveris* Henning.] Sborn. UVTI (Ustav Vedeckotech Inform) Ochrana Rostlin 9: 45-48. 464.8 Sb5.

(133) Foister, C. E.
1940. Descriptions of new fungi causing economic diseases in Scotland. Edinburgh Bot. Soc., Trans. and Proc. 1939-1940, 33 (1): 65-68, illus. 451 Ed4T.

Phytophthora verrucosa on *Meconopsis* spp., p. 65.

(134) ______
1961. The economic plant diseases of Scotland. A survey and check list covering the years 1923-1957. Scotland Dept. Agr. and Fisheries Tech. Bul. 1: 1-209. 10 Sco 32.

Peronospora arborescens on *P. dubium, P. somniferum,* and *Meconopsis* spp., p. 130; *Mucilago spongiosa, Phytophthora cactorum, P. parasitica, P. verrucosa,* and *Sclerotinia sclerotiorum* on *Meconopsis* spp., p. 127.

(135) Fokin, A. D.
1924. Diseases of cultivated plants observed in the Viatka government (Kirov Oblast) during the summer of 1922. [Transl. from Russ.] Vseross. Entom.-Fitopat. S'ezd, Trudy 4: 108-115. 422.25 V96.

Cladosporium herbarum and *Peronospora arborescens* on *P. somniferum,* p. 112.

(136) Fraymouth, J.
1956. Haustoria of the *Peronosporales.* Brit. Mycol. Soc. Trans. 39: 79-107, illus. 451 B76.

Peronospora arborescens on *P. rhoeas,* pp. 80, 87, and 105.

(137) Fron, G.
1943. Sur une maladie du pavot-oeillette. [On a disease of the oil poppy.] Acad. Agr. France, Compt. Rend. 29: 358-359. 14 P215 Bc.

Peronospora arborescens on *P. somniferum.*

(138) Fujioka, Y.
1952. List of crop diseases in Japan. Gen. Hq. Supreme Commander Allied Powers, Tokyo, Japan, Econ. and Sci. Sec. Nat. Resources Div. Prelim. Study No. 73, 212 pp. 9 Su72.

Bacterium aroidea, Bacterium papavericola, Bacterium papaveris, Botrytis cinerea, Cercospora papaveri, Sclerotinia sclerotiorum, E. cichoracearum, and *Peronospora arborescens* on *P. somniferum,* pp. 113-114.

(139) Fulara, A.

1968. Grozne choroby maku. [Important diseases of poppy.] Ochrona Roslin 12 (3): 16-17, illus. 464.8 Oc3.

Peronospora arborescens, Helminthosporium papaveris, poppy mosaic and yellowing virus (Icterus) on *P. somniferum* in Poland.

(140) Garbowski, L.

1918. Les champignons parasites recueillis dans le governement de Podolie (Russie), pendant l'ete 1915. [Parasitic fungi collected in the province of Podolia, Russia during the summer of 1915.] Soc. Mycol. de France, Bul. 33: 73-91, illus. 451 P213.

Macrosporium somniferi on *P. somniferum*, p. 91.

(141) ______ and Juraszkowna, H.

1933. Choroby roślin użytkowych w okresie 1926-1930. Zestawienie notowań Zakladów Ochrony Roslin. [Diseases of useful plants in the period 1926-1930. A summary of the reports of the Plant Protection Stations.] Rocznik Ochrony Roslin, Sect. A, 1: 97-235. 464.9 R59.

Alternaria brassicae var. *somniferum; Cladosporium herbarum; Entyloma fuscum; Fusarium* sp.*; Macrosporium commune*, and *Peronospora arborescens* on *P. somniferum;* bacteriosis on *P. orientale* and *P. somniferum;* and *Botrytis cinerea* on *P.* sp., pp. 154 and 204.

(142) Gardner, M. W.

1929. Indiana plant diseases, 1927. Indiana Acad. Sci. Proc. 38: 143-157. 1928 (1929). 500 In2.

Rhizoctonia [damping-off] of *P. orientale*, p. 14.

(143) Garman, P.

1915. Some Porto Rican parasitic fungi. Mycologia 7: 333-340. 450 M99.

Septoria chelidonii on *Argemone mexicana*, p. 334.

(144) Gassner, G.

1949. Der Einfluss der Standweite auf den Befall des Mohns durch *Helminthosporium papaveris* Hennig. [The influence of planting width on the infection of poppy by *Helminthosporium papaveris* Hennig.] Nachrichtenbl. des Deut. Pflanzenschutzd. (Braunschw.) 1: 119-123, illus. 442.9 B832. RAM 29: 433-434.

Helminthosporium papaveris [*Pleospora calvescens*].

(145) Gaumann, E.
1923. Beiträge zu einer Monographie der Gattung *Peronospora* Corda. [Contributions to a monograph on the genus *Peronospora* Corda.] Beitr. Kryptogamenflora Schweiz. 5 (4): 1-360, illus. 462 G23.

Peronospora arborescens on *Argemone mexicana, Meconopsis cambrica, P. argemone, P. alpinum, P. dubium, P. somniferum,* and *P. rhoeas,* pp. 66-72.

(146) Geesteranus, see Mass Geesteranus

(147) Georghiou, G. P., and Papadopoulos, C.
1957. A second list of Cyprus fungi. Cyprus Dept. Agr. Tech. Bul. TB-5. 38 pp. 21.7 C99.

Entyloma fuscum on *P. somniferum* and *P. rhoeas,* pp. 26-27.

(148) Ghaffar, A., and Kafi, A.
1968. Fungi of Karachi [West Pakistan]. Pakistan Jour. Sci. 20: 5-19. 475 P172.

Peronospora gaeumannii on *Argemone mexicana,* p. 6.

(149) Gizhits'kaia (Girzitska), Z. K.
1926. Fungi collected in the autumn of 1925 and spring and summer of 1926. Kiev. Bot. Sadu Visnik 4: 21-33. 451 K54.

Pleospora papaveracea, Helminthosporium sp. on *P.* spp., p. 27.

(150) ______
1928. Conidial stage of *Pleospora papaveracea* Sacc. [Transl. from Russ.] Vsesoiuzn. S'ezda Bot. Leningrad, Dnevnik. 1928: 172-173. 451 V96.

On *P. somniferum.*

(151) ______
1929. Materials for the mycoflora of the Ukrainian SSR. [Transl. from Ukrain.] Kiev. Bot. Sadu Visnik 9: 92-101. 451 K54.

Peronospora arborescens on *P. somniferum,* p. 94.

(152) ______
1929. Materials for the mycoflora of the Ukrainian SSR. [Transl. from Ukrain.] Kiev. Bot. Sadu Visnik 10: 4-41. 451 K54.

Dendryphium penicillatum isolated from pure culture of *Pleospora papaveracea* Sacc., p. 38.

(153) Gobelez, M.
1963. La mycoflore de Turquie. I. [The mycoflora of Turkey. I.] Mycopath. Mycol. Appl. 19: 296-314. 450 M994.

Entyloma fuscum on *P. somniferum* and *P. commutatum*, p. 306; and *Peronospora arborescens* on *P. commutatum*, p. 297.

(154) ______
1964. La mycoflore de Turquie. II. [The mycoflora of Turkey. II.] Mycopath. Mycol. Appl. 23: 47-67. 450 M994.

Curvularia geniculata and *Helminthosporium papaveris* on *P. somniferum*, pp. 52 and 55.

(155) Goidanich, G.
1932. La verticilliosi dell' "Acer campestre" L. e alcuni altri casi di tracheomicosi in Italie. [Verticillosis of *Acer campestre* L. and some other examples of tracheomycosis in Italy.] Rome Staz. di Patol. Veg., Bol. N.S. [Series II] 12: 285-297. 464.9 R662.

Verticillium sp. on *P. rhoeas*, p. 295.

(156) Golovin, P. N.
1956. Monographic review of the genus *Leveillula* Arnaud (powdery mildew fungi - fam. Erysiphaceae). [Transl. from Russ.] Akad. Nauk SSSR. Bot. Inst., Trudy Ser. II Sporovye Rast. 10: 195-308. 451 Sa21P.

Leveillula papaveracearum Golov. f. *argemones* on *Argemone platyceras*, pp. 265-266.

(157) ______
1960. Powdery mildews parasitizing cultivated and useful wild plants. [Transl. from Russ.] 266 pp., illus. Akad. Nauk SSSR. Moscow-Leningrad. 464.1 G58.

Erysiphe cichoracearum f. *papaveris* on *P. somniferum*, pp. 87-89.

(158) Gonzalez Fragoso, R.
1924. Peronosporaceos conocidos actualmente en la flora iberica. [Peronosporaceae actually known in the Iberian flora.] Soc. Espan. de Hist. Nat., Bol. 24: 305-312. 506 M263B.

Peronospora arborescens on *P.* spp., p. 306.

(159) Gordon, W. L.
1959. The occurrence of *Fusarium* species in Canada. VI. Taxonomy and geographic distribution of *Fusarium* species on plants, insects, and fungi. Canad. Jour. Bot. 37: 257-290. 470 C16C.

F. solani, *F. oxysporum*, and *F. equiseta* on *P. rhoeas*, pp. 268, 276, and 282.

(160) Gorlenko, M. V., and Voronkevich, I. V.
1949. Causal organisms of bacterial spot of tomatoes and poppy. [Transl. from Russ.] Mikrobiologiia 18: 257-262. 448.3 M528.

Bacterium papavericola on *P.* spp.

(161) Greschik, V.
1890. (See ref. 50)

(162) Grujicic, G., and Tomasevic, B.
1956. Diseases and pests of cultivated plants observed in the period of twenty years, 1934-1953. Zashtita Bilja 38: 87-106. 464.8 Z1.

Peronospora arborescens on *P.* spp., p. 90, Yugoslavia.

(163) Grummer, G.
1951. Beiträge zur Eigenschaftanalyse der Anfälligkeit von *Papaver somniferum* gegen *Helminthosporium papaveris*. I. [Contributions toward the specific analysis of susceptibility of *Papaver somniferum* to *Helminthosporium papaveris* I.] Zuchter 21: 306-322, illus. 442.8 Z8.

(164) ______
1952. Beiträge zur Eigenschaftsanalyse der Anfälligkeit von *Papaver somniferum* gegen *Helminthosporium papaveris*. II. Mitteilung. [Contributions toward the specific analysis of susceptibility of *Papaver somniferum* *Helminthosporium papaveris*. II.] Nachrichtenbl. Deut. Pflanzenschutz. [Berlin] N.S. 6: 32-36, illus. 464.9 N11.

(165) ______
1952. Beiträge zur Eigenschaftsanalyse der Anfälligkeit von *Papaver somniferum* gegen *Helminthosporium papaveris*. III. Mitteilung. [Contributions toward the specific analysis of susceptibility of *Papaver somniferum* to *Helminthosporium papaveris*. III.] Zuchter 22: 366-373. 442.8 Z8.

(166) ______
1953. Die Wirkung von *Alternaria* - Infektionen an Mohnkapseln aug die Keimungsbereitschaft ihrer Samen. [The influence of *Alternaria* infections of poppy capsules on promptitude of germination by their seeds.] Flora [Jena] 140: 298-306. 450 F66. RAM 33: 114.

A. brassicae var. *somniferum* on *P. somniferum*.

(167) ______
1955. Der mohn. [The poppy.] Neue Brehm-Bucherei 152, 40 pp., illus. 407 N392.

Peronospora arborescens and *Helminthosporium* on *P. somniferum*, pp. 14-15.

(168) ______
1955. Die Beziehungen zwischen dem Eiweisstoffwechsel von Kulturpflanzen und ihrer Angälligkeit gegen parasitische Pilze. [The relation between the protein metabolism of cultivated plants and their susceptibility to parasitic fungi.] Phytopath. Ztschr. 24: 1-42, illus. 464.8 P562. RAM 35: 115-116.

Helminthosporium papaveris on *P. somniferum*.

(169) Gustavsson, A.
1959. Studies on Nordic *Peronosporas*. I. Taxonomic revision. Opera Bot. 3 (1): 1-271. 450 Op22.

Peronospora argemones Gaum. on *P. argemone* in Sweden, Denmark, Esthonia, Czechoslovakia, France, Germany, Great Britain, Latvia, Russia, and Israel, p. 72; *P. arborescens* on *P. dubium* in Sweden, Denmark, Esthonia, France, Germany, Great Britain, Latvia, Netherlands, Romania, Russia, Switzerland, and Yugoslavia, pp. 70-72; *Peronospora arborescens* on *P. rhoeas* in Sweden, Denmark, Austria, France, Germany, Great Britain, Italy, Portugal, Romania, Russia, Switzerland, Yugoslavia, Algeria, Israel, and Pakistan, pp. 70-72; *Peronospora arborescens* on *P. somniferum* in all of above plus Finland, India, Japan, Egypt, Argentina, Iran, and Bulgaria.

(170) ______
1959. Studies on Nordic *Peronosporas*. II. General account. Opera Bot. 3 (2): 1-61, illus. 450 Op22.

Peronospora arborescens, pp. 13, 14, 23, and 33.

(171) ______
1959. Studies on the oospore development in *Peronospora*. Bot. Notiser 112: 1-16. 450 B656.

Peronospora argemones on *P. argemone* and *Peronospora arborescens* on *P. dubium* and *P. rhoeas*, p. 10.

(172) Hadzistevic, D.
1955. The incidence of plant pests and diseases in the PR of Serbia in 1953. Zashtita Bilja 27: 89-120. 464.8 Z1. RAM 35: 91.

Peronospora arborescens on *P. somniferum*.

(173) Hamlyn, B. M. G.
1953. Quantitative studies on the transmission of cabbage black ring spot virus by *Myzus persicae* (Sulz.). Ann. Appl. Biol. 40: 393-402. 442.8 An72.

On *P. somniferum*, *P. rhoeas*, and *P. nudicaule* by mechanical transmission, p. 394.

(174) Hansen, H. R.
1944. Industriplanter. [Industrial plants.] [Denmark] Statens Plantepatologiske Forsøg Overs. over Plantesgydomme 270: 41-59. 464.9 Sa4M.

Peronospora arborescens on *P. somniferum*, p. 48.

(175) Hauduroy, P., Ehringer, G., Urbain, A., and others.
1937. Dictionnaire des Bacteries pathogenes. [Dictionary of pathogenic bacteria.] 597 pp. Paris. 448.2 H293.

Erwinia papaveris on *P. rhoeas* and *Argemone mexicana*, p. 214.

(176) Hauman [-Merck], L.
1914. Les parasites vegetaux des plantes cultivees en Argentine et dans les Regions Limitrophes. [Plant parasites of crops in Argentina in the boundary provinces.] Buenos Aires Museo Nac. Hist. Nat., An. 26: 163-225. 516 B86A.

Erysiphe polygoni on *P. somniferum*, p. 177.

(177) ______ and Parodi, L. R.
1921. Los parasitos vegetales de las plantas cultivadas en la Republica Argentina. [Parasites of cultivated plants in the Republic of Argentina.] Buenos Aires Univ. Facul. Agron. Vet., Ser. III, Rev. 3: 227-274, illus. 9 B863.

Erysiphe polygoni on *P. somniferum*, p. 238.

(178) Heeger, E. F., and Poethke, W.
1947. *Papaver somniferum* L. der Mohn; Anbau, Chemie, Verwendung. [*P. somniferum* L. the poppy; cultivation, chemistry and use.] Pharmazie 4 Beih. 1 Erganzungsband: 235-340. 396 H364.

Peronospora arborescens and *Helminthosporium papaveris*, p. 262.

(179) Heinze, K.
1952. Virusübertragungsversuche mit Blattläusen auf Dahlein, Gurken, Zwiebeln, Wasserrüben und einigen anderen Pflanzen. [Virus transmission experiments with aphids on dahlias, cucumbers, onions, turnips and some other plants.] Ztschr. Pflanzenkrank. 59: 3-13, illus. 464.8 Z3.

Poppy mosaic on *P. somniferum*, aphid vectored.

(180) Hemmi, T.
1920. Beiträge zur Kenntnis der Morphologie und Physiologie der japanischen Gloeosporien. [Contribution to the knowledge of the morphology and physiology of the *Gloeosporiums* of Japan.] Hokkaido Imp. Univ. Col. Agr. Jour. 9: 1-159, illus. 107.6 J273J.

Gloeosporium sp. on *P. somniferum*, pp. 32, 83, and 104.

(181) ______
1921. Nachträge zur Kenntnis der Gloeosporien. [Supplements to the knowledge of *Gloeosporium*.] Hokkaido Imp. Univ. Col. Agr. Jour. 9: 305-346. 107.6 J273J.

Gloeosporium sp. on *P. somniferum*, pp. 314, 317, and 325.

(182) ______ and Nojima, T.
1927. Contributions to the knowledge of anthracnoses of plants. I. Notes on three new or little known anthracnoses of the cultivated plants in Japan. Kyoto Univ. Col. Agr. Mem. 3 (2): 26-39. 107.6 K994.

Gloeosporium sp. on *P. somniferum* might have *Glomerella cingulata* as a perfect stage, pp. 31-37.

(183) Hennings, P.
1902. Fungi japonici. III. [Japanese fungi. III.] Bot. Jahrb. 32: 34-45. 450 En3B.

Peronospora arborescens on *P. somniferum*, p. 34.

(184) Herbert, D. A.
1939. Plant viruses in Queensland. Queensland Univ. Dept. Biol., Papers 1 (11): 1-4, 1 Pl. 442.9 Q33.

Spotted wilt of tomato on *P. nudicaule*.

(185) Hill, A. V.
1943. Insect transmission and host plants of virescence (big bud of tomato). Austral. Council Sci. and Indus. Res., Jour. 16: 85-90. 514 Au72J.

On *Argemone mexicana*, p. 87.

(186) Hirata, K.
1955. Comparison of powdery mildews and their host plants of Japan and the United States of America. Niigata Univ. Fac. Agr. Bul. [Japan] 30 (5): 146-152. 22.5 N573.

Erysiphe polygoni on *P. somniferum* and *Eschscholtzia californica*, p. 150.

(187) ______
[1958?]. Host range and geographic distribution of *Leveillula taurica* (*Oidiopsis taurica*). Niigata Univ. Fac. Agr. Bul. [Japan] 33 (3): 146-154, 1 map. 22.5 N573.

Leveillula taurica on *P.* spp. and *Eschscholtzia*, p. 147.

(188) ______
1966. Host range and geographical distribution of the powdery mildews. 472 pp. Fac. Agr. Niigata Univ. Japan. Published by author.

Erysiphe cichoracearum on: *P. argemone* in the Lithuanian SSR; *P. rhoeas* in the Lithuanian SSR; *P. somniferum* in Formosa, India, European USSR, Kazakh SSR, Lithuanian SSR, Siberia and the Ukrainian SSR; and *P.* sp. in the European USSR and the Ukrainian SSR. *Erysiphe communis* on: *Chelidonium majus* var. *asiaticum* in Japan; *Eschscholtzia californica* in Romania, Switzerland and the USA; *Meconopsis cambrica* in Switzerland; *P. alpinum* in the USA and France; *P. amurense* in the European USSR; *P. dubium* in France, Yugoslavia and Switzerland; *P. dubium* var. *lecoquii* in Switzerland; *P. hybridum* in Italy; *P. nudicaule* in Australia, Canada, Norway, South Africa, Switzerland, Tasmania and the USA; *P. rhoeas* in Australia, France, Germany, Hungary, Italy, Nyasaland, Portugal, Romania, South Africa, Switzerland and the Lithuanian SSR; *P. rhoeas* var. *rubiaei* in Corsica; *P. somniferum* in Finland, France, Hungary, India, Romania, South America, Switzerland, the USA, the Lithuanian SSR and Siberia; and *P. somniferum* var. *nigrum* in France. *Leveillula papaveracearum* on *Argemone platyceras* in the Uzbek SSR. *Leveillula taurica* on *Argemone mexicana* in the Sudan and West Pakistan; *A. platyceras* in the Uzbeck SSR; *Eschscholtzia* sp. in Tanganyika; *P. rhoeas* in France and West Pakistan; *P. somniferum* in Formosa; and *P.* sp. in the Sudan. *Oidium* spp. on: *Argemone mexicana* in India; *Chelidonium luteum* in Spain; *C. majus* in France and Italy; *C. majus* var. *grandiflorum* in France; *P. nudicaule* in New Zealand; *P. orientale* in Bulgaria; *P. rhoeas* in Australia, Bulgaria, India, and Tanganyika; *P. somniferum* in Bulgaria, Israel, South America and the USA; and *P.* sp. in Britain, Portugal, Southern Rhodesia, Tanganyika, the USA and the Armenian SSR. *Sphaerotheca macularis* on *P. orientale* in Armenia, pp. 118-120.

(189) ______ and Wada, K.
1973. List of powdery mildew fungi and their host plants found up to date in Niigata Prefecture. Tottori (Japan) Mycol. Inst., Rpt. 10: 485-503.

Erysiphe polygoni on *Chelidonium majus* var. *asiaticum*, p. 489.

(190) Hiratsuka, N.
1932. Inoculation experiments with some heteroecious species of the Melampsoraceae in Japan. Japan. Jour. Bot. 6: 1-33. 450 J27.

Chelidonium majus was susceptible to *Melampsora magnusiana* when inoculated with material from *Populus sieboldi*, p. 15.

(191) Ho, T.-F.
1931. A preliminary list of the fungi of Japan. Natl. Peiping Univ., China. 45 pp. 462.16 H65.

Peronospora chelidonii on *Chelidonium majus*, p. 4.

(192) Hollings, M.
1957. Anemone mosaic — a virus disease. Ann. Appl. Biol. 45: 44-61. 442.8 An72.

P. rhoeas, a symptomless carrier; *P. somniferum* dwarfed when grown at 8-10 C.

(193) ______
1962. Studies of pelargonium leaf curl virus. I. Host range, transmission and properties *in vitro*. Ann. Appl. Biol. 50: 189-202. 442.8 An72.

Virus multiplies in *P. somniferum*, but this host symptomless, p. 195.

(194) ______
1965. Some properties of celery yellow vein, a virus serologically related to tomato black ring virus. Ann. Appl. Biol. 55: 459-470. 442.8 An72.

P. somniferum was not susceptible, p. 463.

(195) Hopkins, J. C. F.
1939. A descriptive list of plant diseases in Southern Rhodesia and their control. South. Rhodesia Dept. Agr. Mem. No. 2, 51 pp. 24 R346.

Oidium on *P.* sp., p. 30.

(196) ______
1950. A descriptive list of plant diseases in Southern Rhodesia and list of bacteria and fungi. South. Rhodesia Dept. Agr. Mem. No. 2 (Ed. 2, rev.) 106 pp. 24 R346.

Oidium sp. on *P.* sp., p. 49.

(197) ______
1951. Botany and plant pathology. Summary of annual report for the branch of botany and plant pathology for the year ended 30th September 1950. Rhodesia Agr. Jour. 48: 454-459. 24 R34.

Oidium sp. on *P. nudicaule.*

(198) Hruby, J.
1928. Die Pilze Mährens und Schlesiens. Ein Versuch der Gliederung der Pilzdecke dieser Lander. [The fungi of Moravia and Silesia. A research on the systematics of fungus distribution in these countries.] Hedwigia 68: 119-190. 450 H35.

Peronospora arborescens on *P. argemone,* p. 185; *Pleospora papaveracea* on *P.* sp., p. 155.

(199) ______
1929. Beiträge zur Pilzflora Mährens und Schlesiens. [Contribution to the fungus flora of Moravia and Silesia.] Hedwigia 69: 173-211. 450 H35.

Peronospora arborescens on *P. dubium, P. somniferum, P. rhoeas,* and *Chelidonium majus,* p. 183.

(200) Hume, H. H.
1899. Fungi collected in Colorado, Wyoming, and Nebraska in 1895, 1896, and 1897. Davenport Acad. Nat. Sci. Proc. 7: 246-300. 500 D27P.

Peronospora corydalis De Bary on *Argemone platyceras,* reported was actually *Peronospora arborescens* according to Wilson (1908), a first report for U.S., p. 254.

(201) Hynes, H. J.
1938. Spotted wilt of Iceland poppies. New South Wales Dept. Agr. Plant Dis. Leaflet No. 67: 1-2, illus. 464.9 N47.

On *P. nudicaule.*

(202) Ideta, A.
1911. Handbuch der Pflanzenkrankheiten Japans. [Handbook of the plant diseases of Japan.] Ed. 4, illus. Tokyo:Skokwabo 935 pp. 464 Id2T.

Peronospora arborescens on *P. somniferum,* p. 158.

(203) Ihnatowicz, A.
1972. Grzyby z rodziny Peronosporaceae i Erysiphaceae znalezione w okolicy szczina. [New reports of fungus species in the families Peronosporaceae and Erysiphaceae in the Szczecin area, Poland.] Szczecin Wyzsz. Szk. Roln. Zesz. Nauk 9 (38): 117-120. 20.5 St4.

Peronospora arborescens on *P. somniferum*, p. 117.

(204) Ikata, S., and Yamauti, K.
1941. Notes on the haustoria of some species of Peronospora. Phytopath. Soc. Japan, Ann. 10: 326-328. 464.9 P562.

Peronospora arborescens on *P. somniferum*.

(205) Ishiyama, T.
1936. New or noteworthy fungi parasitic on agricultural plants in southern Saghalien. [Transl. from Jap.] Sapporo Nat. Hist. Soc. Trans. 14: 297-308. 410.9 Sa6.

Macrosporium papaveris, *M. somniferi*, and *Alternaria brassicae* var. *somniferi* on *P. somniferum*, pp. 305-306.

(206) ______
1936. List of the fungi parasitic on agricultural plants in southern Saghelien. [Transl. from Jap.] Sapporo Soc. Agr. and Forestry, Jour. 28 (131): 1-20. 22.5 So1.

Helminthosporium papaveris, p. 15, *Macrosporium papaveris*, p. 16, and *Peronospora arborescens*, p. 2 on *P. somniferum*.

(207) ______
1938. New diseases found on agricultural crops in Saghalien. [Transl. from Jap.] Agr. and Hort. (Tokyo) 13: 2759-2763, illus. 22.5 N682.

Macrosporium papaveris on *P. somniferum*, pp. 2760-2761.

(208) Ito, S., and Hiratsuka, N.
1927. Uredinales collected in the Hakkoda Mountain Range, Prov. Mutsu, Honshu. Sapporo Nat. Hist. Soc. Trans. 9: 259-273. 410.9 Sa6.

Melampsora magnusiana on *Chelidonium majus*, p. 268.

(209) Jaap, O.
1905. Beiträge zur Pilzflora von Mecklenburg. [Contributions to the fungus flora of Mecklenburg.] Ann. Mycol. 3: 391-401. 450 An76.

Peronospora arborescens on *P. dubium*, p. 392.

(210) ______
1907. Beiträge zur Pilzflora der Schweiz. [Contributions to the fungus flora of Switzerland.] Ann. Mycol. 5: 246-272. 450 An76.

Septoria chelidonii on *Chelidonium majus*, p. 265.

(211) ______
1908. Beiträge zur Pilzflora der österreichischen Alpenländer. I. Pilze aus Südtirol und Kärnten. [Contributions to the fungus flora of the Austrian Alps. I. Fungi from South Tyrol and Carinthia.] Ann. Mycol. 6: 192-221. 450 An76.

Septoria chelidonii on *Chelidonium majus*, p. 220.

(212) ______
1911. Ein kleiner Beitrag zur Pilzflora der Vogesen. [A short contribution to the fungus flora of the Vosges, France.] Ann. Mycol. 9: 330-340. 450 An76.

Septoria chelidonii on *Chelidonium majus*, p. 337.

(213) ______
1914. Pilze bei Bad Nauheim in Oberhessen. [Fungi at Bad Nauheim in Oberhessen.] Ann. Mycol. 12: 1-32. 450 An76.

Peronospora arborescens on *P. dubium*, p. 4.

(214) ______
1914. Ein kleiner Beitrag zur Pilzflora von Thüringen. [A short contribution to the fungus flora of Thuringia.] Ann. Mycol. 12: 423-437. 450 An76.

Septoria chelidonii on *Chelidonium majus*, p. 435.

(215) ______
1922. Weitere Beiträge zur Pilzflora von Triglitz in der Prignitz. [An additional contribution to the fungus flora of Triglitz in the Prignitz.] Bot. Ver. der Brandenb. Verhandl. 64: 1-60. 451 B73V.

Peronospora arborescens on *P. dubium* and *P. somniferum*, p. 7.

(216) Jeremic, M.
1954. Appearance of pests and plant diseases in the PR of Serbia in 1952. Zashtita Bilja 21: 61-94. 464.8 Z1.

Peronospora arborescens on *P.* spp., p. 77.

(217) Johnson, B.
1932. Specificity to penetration of the epidermis of a plant by the hyphae of a pathogenic fungus. Amer. Jour. Bot. 19: 12-31. 450 Am36. Biol. Absts. 7 (3). 1933.

Eschscholtzia californica susceptible when inoculated with *Colletotrichum circinans*, pp. 15 and 21.

(218) Johnson, J.
1916. Host plants of *Thielavia basicola.* Jour. Agr. Res. 7: 289-300. 1 Ag 84J.

Thielavia basicola on *P. nudicaule*, p. 294.

(219) Josifovic (Yossifovith, Yossifovitch), M.
1928. Kingdom of the Serbs, Croats, and Slovenes; A destructive disease of the poppy in Southern Serbia. Int. Rev. Agr. N.S. 19: 210-211. 241 In 82. Reprinted in Int. Bul. Plant Prot. 2 (2): 210-211. 464.8 In 8.

Peronospora arborescens on *P. somniferum.*

(220) ______
1929. *Peronospora arborescens* (Berk.) de Bary, parasite tres important de *Papaver somniferum* en Yougoslavie. [*Peronospora arborescens* (Berk.) de Bary, a very important parasite of *Papaver somniferum* in Yugoslavia.] Rev. de Path. Veg. et Ent. Agr. de France 16: 235-270, illus. 464.9 Sol. RAM 9: 268-270.

(221) ______
1929. *Peronospora arborescens* (Berk.) de Bary, un grave parasite du *Papaver somniferum.* [*Peronospora arborescens* (Berk.) de Bary, a serious parasite of *Papaver somniferum.*] Acad. d'Agr. de France, Compt. Rend. 15: 1010-1013. 14 P215Bc. (Abridged version of No. 220 above.)

(222) Kalani, D. K., and Matin, M. A.
1969. Free amino acids of poppy (*Papaver somniferum* L.) leaves infected with *Peronospora arborescens* (Berk.) de Bary. Lab. Pract. 18: 152. (Mid Atlantic Reg. Med. Library.)

(223) Kalymbetov, B. K.
1956. Mycological flora of the south-western Turkman SSR. [Transl. from Russ.] Akad. Nauk SSSR. Bot. Inst. Trudy Ser. II. Sporovge Rast. 11: 175-312, illus. 451 Sa21P.

Peronospora arborescens on *P. pavonium* Schrenk., p. 195; *Entyloma fuscum* on *P. litvinovii* Feddl., p. 253; and *Cladosporium herbarum* Link on *P. litvinovii* and *P. croceum* Ldb., pp. 289-290.

(224) ______
1959. Material for a sac-fungus flora of Zailiiski Alatau. [Transl. from Russ.] Akad. Nauk Kazakh. SSR Inst. Bot., Trudy 7: 268-338. 451 AL63.

Erysiphe cichoracearum f. *papaveri* and *Sclerotinia libertiana* on *P. somniferum*, pp. 284, and 336-337.

(225) ______
1969. Fungal flora of the Zailiiski Alatau (Northern Tien Shan). [Transl. from Russ.] 470 pp. Alma-Ata, Kazakh. SSR. QK609.A4K3.

Peronospora arborescens, *Erysiphe cichoracearum* f. *papaveris*, *Cladosporium herbarum*, and *Dendryphion penicillatum* on *P. somniferum*; *Peronospora argemones* on *P. croceum*; and *Peronospora arborescens*, *Entyloma fuscum*, and *Cercospora papaveris* on *P. pavonium*, pp. 75, 96, 190, 328, 330-331, and 333.

(226) Kaminski, E.
1954. Ochrona Roslin Oleistych i Włokistych. [Protection of oleaginous and fiber plants.] Ed. 2, 120 pp., illus. Warsaw. 423 K123.

Bacillus papaveris, *Helminthosporium papaveris*, *Peronospora arborescens*, *Entyloma fuscum*, and *Erysiphe* sp. on *P. somniferum*, pp. 81-85.

(227) Kapustinskiy, A. F.
1950. Immunity of pigmented plants and antibiotics. [Transl. from Russ.] Uspekhi Sovrem. Biol. 29: 370-378. 442.8 Er3.

Peronospora arborescens on *P. somniferum* - no oospores in violet flowered plants.

(228) Karsten, P. A.
1890. Sphaeropsideae hucusqve in Fennia Observatae. [Sphaeropsidales which have been observed in Finland.] Soc. pro Fauna et Flora Fenn., Acta 6, (2) 86 pp. 451 H36A.

Septoria chelidonii on *Chelidonium majus*, p. 22.

(229) Kazakevich, L. I., and Prisiazhniuk, A. A.
1932. Contributions to the mycological flora of the lower Volga region. [Transl. from Russ.] Simferopol Lekarstv. i Aromat. Rast., Trudy 1: 131-156. 77.9 Si4.

Septoria chelidonii on *Chelidonium majus*, p. 151.

(230) Keissler, C.
1925. Schedae ad "kryptogamas exsiccatas" editae a Museo historiae naturalis Vindobonensi (olim Museum Palatinum). Cent. XXIX. [Taxonomy of "cryptogamic exsiccatae" published by the Museum of Natural History Vindobonensi (olim Museum Palatinum). Cent. XXIX.] Vienna Ann. des Naturhist. Mus. Wein 38: 134-145. 410.9 V672.

Pleospora papaveracea on *P. somniferum*, p. 137.

(231) Keissler, K. von.
1907. Beitrag zur Kenntnis der Pilzflora Kärntens. [Contribution to the knowledge of the fungus flora of Carinthia.] Ann. Mycol. 5: 220-236. 450 An76.

Septoria chelidonii on *Chelidonium majus*, p. 230.

(232) Khan, A. H.
1957. Studies on growth and cultivation characteristics of medicinal and other economic plants under semi-temperate conditions. Pakistan Jour. Forestry 7: 319-369. 99.8 P17.

Virus ? on *P. somniferum*, p. 344.

(233) Khan, S. A., and Kamal, M.
1968. The fungi of South West Pakistan. Part I. Pakistan Jour. Sci. and Indus. Res. 11: 61-80. 475 P174.

Cercospora papavericola on *Argemone mexicana*, p. 70; *Leveillula taurica* on *Argemone mexicana* and *P. rhoeas*, pp. 64-65; and *Peronospora gaeumanni* on *Argemone mexicana*, p. 63.

(234) Khristov (Christoff), A.

1930. Some plant diseases new for Bulgaria. [Transl. from Bulgar.] Sviedienia po Zemledelieta 11 (11-12): 3-16. 21 B87.

Bacterium papavericola, *Pleospora calvescens*, and *Helminthosporium papaveris* on *P. somniferum*, pp. 4, 6, and 10.

(235) ______

1930. Pleosporata po kulturniya maku. [The *Pleospora* disease of cultivated poppy.] 99 pp. Sofia, Bulgar. Govt. Printing Office. 464.09 K52.

(236) ______

1931. A bacterial blight of the opium poppy. [Bulgar.] Sviedienia Zeml. 12 (1/2): 27-46, illus. 21 B87. RAM 11: 73.

Bacterium papavericola.

(237) ______

1933. A new bacterial blight of opium poppy caused by *Bacillus* (*Erwinia*) *papaveri* sp. nov. Spis. Zeml. Opitni Inst. v Bulgaria 5 (9/10): 1-31, illus. 106.3 R32. RAM 13: 307.

Erwinia papaveri on *P. somniferum*, *P. alpinum*, and *P. orientale*.

(238) ______

1934. Some new plant diseases for Bulgaria. Bulgarsk. Bot. Druzh., Izv. (Sofia) 6: 37-48. 451 B61.

Oidium erysiphoides on *P. somniferum* and *P. orientale*, p. 45.

(239) ______

1943. Fungi causing spots on the balls and molding the seed of opium poppy. Bulgaria Spisan. Zemed. Opitni Inst. 13: 13-19. 106.3 R32.

Peronospora arborescens, *P. calvescens*, *Alternaria brassicae* var. *somniferum*, *Fusarium scirpi* var. *caudatum*, *Mycosphaerella tulasnei*, *Ophiobolus sativus*, *Macrosporium bresadolae*, *Fusarium* sp., *Trichothecium roseum*, *Sclerotinia* sp., *Rhizopus* sp., *Heterosporium echinulatum*, *Penicillium* sp., and *Mucor mucedo* on *P. somniferum* causing capsule spotting and seed infection.

(240) King, C. J., Hope, C., and Eaton, E. D.
1934. Further observations on the natural distribution of the cotton root-rot fungus. Phytopathology 24: 551-553. 464.8 P56.

Phymatotrichum omnivorum on *Argemone* sp., p. 551.

(241) Kiraly, Z., and Farkas, G. L.
1959. Biochemical trends in plant pathology. Phytopath. Ztschr. 34: 341-364. 464.8 P562.

Helminthosporium papaveris on *P.* spp., p. 350.

(242) Kirchner, O. von.
1923. Die Krankheiten und Beschadigungen unserer landwirtschaftlichen Kulturpflanzen. [Diseases and damage to our agricultural crops.] Ed. 3. 679 pp. Eugen Ulmer, Stuttgart. 464 K63.

Alternaria brassicae var. *somniferi*, *Dendryphium penicillatum*, *Entyloma fuscum*, *Erysiphe polygoni*, *Heterodera schachtii*, and *Peronospora arborescens*, pp. 308-310, on *P. somniferum*.

(243) ______ and Boltschauser, H.
1898. Falsche mehltau aus Olmohns. (*Peronospora arborescens*). [False mildew of oil-poppy (*Peronospora arborescens*).] Atlas der Krankheiten und Beschadigung unserer Landwirtschaftlichen Kultur-pflanzen. Ser. III. Plate 19. E. Ulmer. Stuttgart. 464 K63A.

(244) Kirschstein, W.
1935. Neue und seltene Ascomyceten. [New and rare Ascomycetes.] Ann. Mycol. 33:202-229. 450 An76.

Metasphaeria patelliformis Kirsch. on *Chelidonium majus*, p. 212.

(245) Kispatic, J.
1950. A contribution to the list of parasitic fungi of Croatia. Hrvatsko Priorodoslovno Drustvo. Glasnik Biol. Sekcije (Ser. 2B) 2/3: 44-50, 1948/1949. (1950). 510 Z1B.

Helminthosporium papaveris on *P. somniferum* and *P. rhoeas*, p. 50.

(246) Klebahn, H.
1899. Kulturversuche mit heteröcischen Rostpilzen. VII Bericht (1898). [Cultural trials with heteroecious rust fungi. 7th report (1898).] Ztschr. f. Pflanzenkrank. 9: 137-160. 464.8 Z3.

Melampsora magnusiana on *Chelidonium majus*, pp. 144, 145, and 146.

(247) Klika, J.
1929. Contributions a la connaissance de le flore mycologique de la Bulgarie-II. [Contribution to the knowledge of the mycological flora of Bulgaria-II.] Acta Bot. Bohemica 8: 119-128. 450 Ac82.

Septoria chelidonii on *Chelidonium majus*, p. 126.

(248) Kljajic, R.
1958. Some less known plant pathogens in the PR of Macedonia. Zashtita Bilja 47/48: 97-103. 464.8 Z1.

Peronospora arborescens, *Pleospora papaveracea*, and *Bacterium papaveri* on *P. somniferum*, p. 97.

(249) Koch de Brotos, L., and Boasso, C.
1955. Lista de las enfermedades de los vegetales en el Uruguay. [List of the plant diseases in Uruguay.] Uruguay Dir. of Agron. Pub. 106, 65 pp. 9.9 Ur84.

Peronospora arborescens on *P. somniferum*, p. 5.

(250) Kochman, J.
1936. Grzyby Głowniowe Polski. [The smut fungi of Poland.] Planta Polonica Materjały do Flory Polskiej 4, 161 pp. Warsaw. [Library ?]

Entyloma fuscum on *P. rhoeas* and *P. somniferum*, pp. 107-109.

(251) Kohler, H.
1963. Beizversuche zur Bekampfung der Helminthosporiose des Ölmohns (*Papaver somniferum* L.) mit antibiotikumhaltigen Kulturfiltraten. [Disinfection research for control of helminthosporiosis of oil poppy (*Papaver somniferum*) with antibiotic containing culture filtrates.] Nachrbl. f. den Deut. Pflanzenschutzdienst N.S. 17: 165-170, illus. 464.9 N11.

(252) Kole, A. P.
1956. On the susceptibility of non-crucifers to the zoosporangial stage of *Plasmodiophora brassicae* Woron. Tijdschr. over Plantenz. 62: 167-170. 464.8 T44.

P. rhoeas more susceptible than other non-crucifers, p. 170.

(253) Koleva-Sekutkovska, M.
1959. Contribution to the knowledge of the parasitic flora in the PR of Macedonia (Yugoslavia). Zashtita Bilja 51: 107-115. 464.8 Z1.

Peronospora arborescens on *P. somniferum*, p. 111.

(254) Komarov, W. L.
1900. Diagnosen neuer Arten und Formen, sowie kritische Bemerkungen zu bekannten Arten, welche in Jaczewski, Komarov, Tranzschel "Fungi Rossiae exsiccati" Fasc. VI und VII (1899) herausgegeben worden sind. [Diagnosis of new species and forms as well as critical observations on known species which were issued in Jaczewski, Komarov, Tranzschel "Fungi Rossiae exsiccati" Fasc. VI and VII (1899).] Hedwigia (Beibl.) 39: (123)-(129). 450 H35.

Didymaria chelidonii on *Chelidonium uniflorum*, p. 129.

(255) Komuro, Y.
1958. Studies on cucumber mosaic virus. III. Host range. Phytopath. Soc. Japan, Ann. 23: 235-239. 464.9 P562.

Susceptible when inoculated, *Argemone mexicana*, *P. orientale* and *P. rhoeas*, p. 239.

(256) Koshkelova, E. N.
1959. Data on the mycoflora of the Turkmen SSR. [Transl. from Russ.] 183 pp. L. C. QK609.R9K6.

Peronospora arborescens on *P. pavoninum* Schrenk., p. 8; *Entyloma fuscum*, p. 83 and *Cladosporium herbarum* on *P. litvinnovii;* and *Cladosporium herbarum* on *P. croceum*, pp. 122-123.

(257) Kothari, K. L.
1966. Mildews that might mar your opium poppy. Indian Farming 16 (7): 23-24, illus. 22 In283.

Peronospora arborescens and *Erysiphe polygoni*.

(258) ______
1969. Other powdery mildews on opium poppy (*Papaver somniferum* L.). Indian Phytopath. 21: 456. 1968 (1969). 464.8 In2.

Oidiopsis sp.

(259) ______ and Prasad, N.
1971. Downy mildew of opium poppy in Rajasthan. Indian Phytopath. 23: 674-688, illus. 1970 (1971). 464.8 In2.

Peronospora arborescens.

(260) ______ and Prasad, N.
1972. Powdery mildew of opium poppy in Rajasthan and its control. Indian Phytopath. 25: 36-39, illus. 464.8 In2.

Erysiphe polygoni.

(261) ______ and Verma, A. C.
1967. Control of downy mildew of opium poppy by root application of fungicides. U.S. Agr. Res. Serv. Plant Dis. Rptr. 51: 686-687. 1.9 P69P.

Peronospora arborescens.

(262) ______ and Verma, A. C.
1972. Germination of conidia of poppy mildew (*Erysiphe polygoni* DC.). Mycopath. et Mycol. Appl. 47: 253-260, illus. 450 M994.

(263) Kovachevsky, I. C.
1966. Gelebes Bohnenmosaik an Mohn. [Bean yellow mosaic virus on poppy.] Nachrichtenbl. f. Deut. Pflanzenschutzd. (Berlin) N.S. 20: 7-8, illus. Univ. Calif. Gen. Libr., Berkeley. RAM 46: 704.

Vector - *Doralis* (*Aphis*) *fabae* (Scop).

(264) ______
1968. Das Bohnengelbmosaik - Virus in Bulgarien. [Bean yellow mosaic virus in Bulgaria.] Phytopath. Ztschr. 61: 41-48. 464.8 P562.

On *P. somniferum*.

(265) Kratochvil, J., and Zakopal, J.
1948. Skodlivi cinitele maku na Morave v R. 1943. [Harmful agents of poppy in Moravia, 1943.] Ochrana Rostlin 21: 26-37. 464.8 Oc3.

Peronospora arborescens on *P. somniferum*, p. 30.

(266) Kunkel, L. O.
1926. Studies on aster yellows. Amer. Jour. Bot. 13: 646-705. 450 Am36.

Transmitted from aster to *Eschscholtzia californica* by the leaf hopper *Cicadula sexnotata*, pp. 665 and 669.

(267) ______
1931. Studies on aster yellows in some new host plants. Boyce Thompson Inst. Plant Res. Contrb. 3 (1): 85-123. 451 B69.

Aster yellows transferred to *P. nudicaule*, p. 88.

(268) Kvashnina, E. S.
1928. Vorläufige Mitteilung über die Erforschung der Krankheiten der Arzneipflanzen und der technischen Kulturen im Nord-Kaukasus. [Preliminary report of the survey of diseases of medicinal and industrial plants in North Caucasus.] Severo-Kavkaz. Kraev. Stan. Zashch. Rast., Izv. 4: 30-46. 423.92 Se8.

Oidium erysiphoides and *Cladosporium herbarum* on *P. somniferum*, p. 39.

(269) Labrousse, F.
1931. Une maladie des Epinards. II. *Pythium ultimum* Trow. organisme associe a la "maladie" de l'Epinard et a une pourriture des rhizomes de l'Igname de Chine. [A disease of spinach. II. *Pythium ultimum* Trow. organism associated with the "disease" of spinach and with a root rot of Chinese yam.] Rev. de Path. Veg. et d'Entomol. Agr. de France 18: 65-74. 464.9 Sol.

On *P. nudicaule*, p. 72.

(270) Lachmann, A.
1959. Micromycetes parasites reconnus en Bourbonnais. [Parasitic micro-fungi identified in the French province of Bourbonnais.] Soc. Bot. de France, Mem. 1958: 63-74. 451 F84M.

Septoria chelidonii on *Chelidonium majus*, p. 73.

(271) Larsen, P.
1932. Fungi of Iceland. *In* Kolderup Rosenvinge, L. and Eug. Warming (editors). The botany of Iceland. 2 (3): 449-607. Copenhagen and London. 459.1 R72.

Leptosphaeria papaveris, p. 476 and *Mycosphaerella arthopyrenoides* on *P. radicatum*, p. 487.

(272) Laubert, R.
1920. Schmarotzerpilz und Pflanzenkrankheiten aus Polen und Masuren. [Parasitic fungi and plant diseases in Poland and Masuren.] Centbl. f. Bakt. Parasitenk. u Infections kr. 52: 236-244. 448.3 C33.

Peronospora arborescens on *P. dubium*, p. 236.

(273) ______
1926. Ein Beitrag zur Schmarotzerpilzflora von Sassnitz. [A contribution on the parasitic fungus flora of Sassnitz.] Hedwigia 66: 93-102. 450 H35.

Peronospora arborescens on *P. dubium*, p. 98.

(274) ______
1929. 140 Rost-, Mehltau-und andere Schmarotzerpilze des Kyffhausers. [140 Rust, mildew and other parasitic fungi of Kyffhausers.] Ztschr. f. Pilzk. N.F. 8: 18-23. 450 Z352.

Erysiphe sp. on *P. rhoeas*, p. 21.

(275) Lavits'ka, Z. H.
1949. The more important fungi in the region of the Kanev Biogeographical Preserve. [Transl. from Ukrain.] Kiev Univ. Naukovi Zapysky 8 (6): 27-45. [Library ?]

Septoria chelidonii on *Chelidonium majus*, p. 40.

(276) Lavrov, N.
1926. Materialen zu einer mykoflora des unterlaufs des Jenissei und der Inseln des Jenissei-Busens. [Materials for a mycoflora of the lower course of the Yenisey and the islands of Yenisey-Busens. (Tomsk, Sibera)] Tomsk. Gosudarstv. Univ., Izv. 77: 158-177. 511 T59.

Cladosporium herbarum, *Entyloma fuscum*, and *Pleospora herbarum* on *P. nudicaule* subsp. *radicatum*.

(277) Lebedeva, L. A.
1933. Fungi and myxomycetes of Finno-Karelian SSR. [Transl. from Russ.] Akad. Nauk, SSSR Bot. Inst. Trudy Ser. II Sporovye Rast. 1: 329-403. 451 Sa21P.

Cladosporium herbarum on *Papaver somniferum*, p. 401, and *Septoria chelidonii* on *Chelidonium majus*, p. 389.

(278) Lelliott, R. A., and Wallace, M. M.
1955. A bacterial disease of Shirley poppies in Tanganyika. Brit. Mycol. Soc. Trans. 38: 88-91, illus. 451 B76. RAM 35: 188.

Pseudomonas papaveris sp. nov. on *P. rhoeas*; *P. orientale* is susceptible.

(279) Lind, J.
1913. Danish fungi as represented in the herbarium of E. Rostrup. 648 pp. illus. Copenhagen. 462 L642D.

Peronospora arborescens on *P. somniferum*, *P. rhoeas*, *P. dubium*, and *P. argemone*, p. 63; *Entyloma fuscum*, p. 269, and *Phoma rhoeadis*, p. 416, on *P. dubium*; *Pleospora herbarum* on *Papaver* spp., p. 229; *Melampsora magnusiana*, p. 291, *Ophiobolus tenellus*, p. 225, *Pleospora herbarum*, p. 229, and *Septoria chelidonii*, p. 453 on *Chelidonium majus*.

(280) ______
1928. The micromycetes of Svalbard. Skrifter om Svalbard og Ishavet 13, 61 pp. 462 L642M.

Botrytis cinerea, p. 39, *Clathrospora pentamera*, p. 30, *Diplodina papaveris*, p. 36, *Lophodermium svalbardene* Lind, p. 16, *Mycosphaerella tassiana*, p. 18, *Pleospora herbarum*, p. 27, *P. infectoria*, p. 25, *Pyrenophora androsaces*, p. 29, *P. cerastii*, p. 28, and *P. chrysospora*, p. 28 on *Papaver radicatum*.

(281) ______
1934. Studies on the geographical distribution of Arctic circumpolar micromycetes. Danske Vidensk. Selsk., Biol. Meddel. 11 (2): 1-152. 442.9 D23.

Clathrospora pentamera, p. 31, *Diplodina papaveris*, p. 121, *Heteropatella umbilicata*, p. 132, *Mycosphaerella tassiana*, p. 63, *Pleospora scrophulariae*, p. 40, and *Pyrenophora chrysospora*, p. 45, on *Papaver radicatum*.

(282) Lindquist, J. C.
1939. Especies argentinas del genero *Peronospora*. [Argentine species of the genus *Peronospora*.] Physis 15: 13-20. 516 So12.

Peronospora arborescens on *P. somniferum*, pp. 14-15.

(283) ______ and Carranza, J. M.
1964. Especies de "*Peronospora*" parasitas de plantas cultivadas en la Republica Argentina. [*Peronospora* species parasitic on cultivated plants in the Argentine Republic.] La Plata Univ. Nac. Facul. de Agron., Rev. 39: 51-62, illus. 1963 (1964). 9 R32.

Peronospora arborescens on *P. nudicaule*, pp. 57 and 59.

(284) Lindtner, V.
1950. Gare Jugoslavije (Ustilaginales Jugoslaviae). [Smuts of Yugoslavia (Ustilaginales of Yugoslavia).] [Belgrade] Prirod. Muz. Srpske Zeml. Glasnik Ser. B. (3/4): 1-110. 510 Y9G.

Entyloma fuscum on *P. somniferum*, *P. rhoeas*, and *P. dubium*, pp. 63 and 64.

(285) Liro, J. I.
1938. Die Ustilagineen Finnlands. II. [The Ustilaginales of Finland. II.] Helsinki Acad. Sci. Fennicae, Ann. Ser. A, 42: 1-720. 442.9 H36.

Entyloma fuscum on *P. argemone*, *P. dubium* and *P. nudicaule*, pp. 114 and 403-406; and *Entyloma chelidonii* on *Chelidonium majus*, p. 115.

(286) Lobik, A. I.
1914. Fungus parasites collected in the Cholm district of the Pskov government (USSR) during the summers of 1912 and 1913. [Transl. from Russ.] Zhur. Bolezni Rast. 8: 74-89. 464.8 Z6.

Peronospora arborescens on *P. somniferum*, pp. 75 and 77.

(287) Losa España, D. M.
1944. Aportaciones a la flora micologica gallega. [Contributions to the mycological flora of Gallega.] Madrid Jard. Bot., An. 4: 195-240. 1943 (1944). 451 M262.

Peronospora arborescens on *P. somniferum*, p. 218; and *Septoria chelidonii* on *Chelidonium majus*, p. 212, in Spain.

(288) Ludwig, A.
1934. Beiträge zur Pilzflora des Siergerlandes und des Hohen Westerwaldes. [Contributions to the fungus flora of victory lands and of the high western forests.] Naturhist. Ver. der Preuss. Rheinlande u. Westfalens, Sitzungsber. 1932/33: 27D-33D. 509 B64S.

Entyloma fuscum on *P. dubium*, p. 30D, Westphalia.

(289) Maas Geesteranus (Geesteranus), H. P.
1958. Verdorringszieke en valse meeldauw. [Withering disease and false mildew of *Papaver somniferum*.] Wageningen Inst. Plantensiekund. Onderzoek., Jaarv. 1958: 80-82. 464.9 W123J.

Peronospora arborescens and *Pyrenophora calvescens* on *P. somniferum*.

(290) ______
1960. *Pyrenophora calvescens* op blauwmaanzaad. [*Pyrenophora calvescens* on seed poppies (*Papaver somniferum*).] Tijdschr. over Plantenz. 66: 237-248. 464.8 T44.

(291) ______
1960. Een geval van noodrijpheid bij blauwmaanzaad. [A premature ripening of seed poppies.] Tijdschr. over Plantenz. 66: 107-110. 464.8 T44.

Possibly sugar beet yellows.

(292) MacClement, W. D., and Richards, M. G.
1956. Virus in wild plants. Canad. Jour. Bot. 34: 793-799. 470 C16C.

Virus in *Chelidonium*, p. 796.

(293) Magnus, P.
1893. Die Peronosporeen der Province Brandenburg. [The Peronosporales of the Province of Brandenburg.] Bot. Ver. der Brandenb., Verhandl. 35: 55-87. 451 B73V.

Peronospora arborescens on *P. argemone*, *P. rhoeas*, *P. dubium*, and *P. somniferum*, pp. 76-77.

(294) ______
1894. Das Auftreten der *Peronospora parasitica,* beeinflusst von der Beschaffenheit und dem Entwickelungszustande der Wirtspflanze. [The occurrence of *Peronospora parasitica,* influenced by the nature (character) and state of development of the host plants.] Deutsch. Bot. Gesell., Ber. (Generalversammlungs-Heft) 12: (39)-(44). 451 D48.

Peronospora arborescens on *P.* spp., pp. (42), (43), and (44).

(295) Maire, R., and Politis, J.
1940. Fungi Hellenici. Catalogue raisonne des champignons connus jusqui'ici en Grece. [Grecian fungi. Systematic catalogue of presently known fungi of Greece.] Athenes Univ. Inst. Bot., Actes 1: 27-179. 451 At4.

Entyloma fuscum, p. 157, and *Peronospora arborescens,* p. 31 on *P. rhoeas.*

(296) ______ and Weiller, M.
1939. Contribution a l'etude de la flore de Libye. [A contribution to the study of the flora of Libya.] Soc. d'Hist. Nat. de l'Afrique du Nord, Bul. 30: 255-314. 410.9 So125.

Peronospora arborescens on *P. hybridum,* p. 313.

(297) ______ and Werner, R. G.
1938. Fungi Maroccani. Catalogue raisonne des champignons connus jusqu'ici au Maroc. [Systematic catalogue of presently known Moroccan fungi.] Soc. des Sci. Nat. du Maroc, Mem. 45: 1-147. 1937(1938). 515 SolM.

Peronospora arborescens on *P. dubium, P. hybridum, P. rhoeas,* and *P. setigerum,* p. 13.

(298) Malkoff, K.
1908. Erster Beitrag zur Kenntnis der Pilzflora Bulgariens. [First contribution to the knowledge of the fungus flora of Bulgaria.] Ann. Mycol. 6: 29-36. 450 An76.

Septoria chelidonii on *Chelidonium majus,* p. 35.

(299) Maminski, E.
1950. Protection of oily and fibrous plants. Warsaw. 78 pp. [Not seen by compiler]

Xanthomonas papavericola on *P. somniferum,* pp. 68-69.

(300) Marchionatto, J. B.
1923. Contribucion al estudio de los hongos parasitos de las plantas cultivades. [Contribution to the knowledge of parasitic fungi of cultivated plants.] La Plata Univ. Nac. Fac. de Agron., Rev. Ser. III, 15 (2): 83-92. 9 R32.

Entyloma fuscum on *P. somniferum* in Argentina, pp. 84-85.

(301) Martin, G. C.
1955. Plant and soil nematodes of the Federation of Rhodesia and Nyasaland. Preliminary investigations. Nematodes catalogued under hosts or associated plants. Rhodesia Agr. Jour. 52: 346-361. 24 R34.

Anguina sp., *Aphelenchoides* sp., *Ditylenchus* sp., and *Tylenchus* sp. on *Eschscholtzia californica*, p. 357.

(302) ______
1959. Plants attacked by root-knot nematodes in the Federation of Rhodesia and Nyasaland. Rhodesia Agr. Jour. 56: 162-175. 24 R34.

Meloidogyne arenaria on *P. rhoeas* and *P. nudicaule*, p. 169, and on *Eschscholtzia californica*, p. 167.

(303) ______
1961. Frequency of occurrence of genera of plant parasitic nematodes in soil samples from the Federation of Rhodesia and Nyasaland. Rhodesia Agr. Jour. 58: 322-323. 24 R34.

Same host and nematodes as in Martin, G. C., 1955.

(304) Martinek, V., and Liska, O.
1972. The evaluation of the world collection of poppy. Rostlinna Vyroba (Prague) 18: 677-686. 64.9 C33.

Helminthosporium papaveris on *P. somniferum*.

(305) Masalab, N. A.
1938. Diseases of medicinal and of some industrial plants caused by species of *Sclerotinia*. [Transl. from Russ.] Sovetskaia Bot. 1938 (6): 67-83. 450 So8.

Sclerotinia sclerotiorum on *P. somniferum* in Crimea, matured apothecia produced annually, pp. 68 and 82.

(306) Massee, G.
1914. Diseases of cultivated plants and trees. 602 pp., illus. New York. 464 M38D.

Peronospora arborescens on cultivated and wild *P.* spp.

(307) Masurat, G., and Stephan, S.
1963. Das Auftreten der wichtigsten Krankheiten und Schädlinge der landwirtschaftlichen und gärtnerischen Kulturpflanzen im Jahre 1962 im Bereich der Deutschen Demokratischen Republik. [The occurrence of the most important diseases and pests of agricultural and horticultural plants in 1962 in the territory of the German Democratic Republic.] Nachrichtenbl. f. den Deut. Pflanzenschutz. [Berlin] N.F. 17: 185-215. 464.9 N11.

Peronospora arborescens and *Helminthosporium papaveris* on *P. somniferum*, p. 201. RAM 43: 2795.

(308) Mathur, R. S.
1969. India — the land and people: Plant diseases. 132 pp. Natl. Book Trust, India. [PDRL Library].

Peronospora arborescens on *P. somniferum* and *Argemone mexicana*, pp. 107-108.

(309) Matsumoto, T.
1919. Culture experiments with *Melampsora* in Japan. Mo. Bot. Gard., Ann. 6: 309-316. 451 M69.

Chelidonium majus susceptible to *Melampsora* (teleutospore material from *Salix babylonica*) when inoculated, pp. 312-313 and 314-315.

(310) ______
1926. On the relationship between *Melampsora* on *Salix pierotii* Miq. and *Caeoma* on *Chelidonium majus* L. and *Corydalis incissa* Pers. Bot. Mag. [Tokyo] 40: 43-47. 450 B651.

Aecial stage of *Melampsora chelidonii-pierotii*, described as a new species, on *Chelidonium majus* and *Corydalis incissa*; uredial and telial stages on *Salix pierotii*. *Chelidonium majus* was not susceptible to *Melampsora* from *Salix babylonica*, in this experiment, as was reported in Matsumoto (1919).

(311) ______ and Hirane, S.
1941. On the causal organism of a bacterial soft rot of poppy in Formosa. Formosa Nat. Hist. Soc. Trans. 31 (208): 1-13, illus. 410.9 N19. Reprinted in Taihoku Univ. Phytopath. Lab. Contrib. 57: 1-13. 464.9 T13. RAM 20: 276.

Bacillus aroidea on *P. somniferum*.

(312) Matsumura, J.
1904. Index plantarum japonicarum. Enumeratio plantarum omnium. [Index of Japanese plants. Listing of all cryptogamic plants.] Fungi, V. 1: 127-184. 439 pp. Tokyo. 460.15 M231.

Peronospora arborescens on *P. somniferum*.

(313) Matzner, F.
1957-58. Der Einfluss einer Dungung mit Chloriden und Sulfaten in Verbindung mit Calcium auf den Ertrag und die Samenqualitat bei Mohn (*Papaver somniferum* L.) unter Berucksichtigung des Befalls durch *Helminthosporium papaveris* nauch Hennig. [The influence of fertilizing with chlorides and sulphates in conjunction with calcium on the yield and seed quality of poppy (*Papaver somniferum* L.) in relation to infection by *Helminthosporium papaveris* according to Hennig.] [Jena] Friedrich-Schiller Univ. Wiss. Ztschr. Math.-Nat. Wiss. 7: 295-303. 509 J41. RAM 37: 732.

(314) Maury, M.
1931. Florule cryptogamique de la Champagne crayeuse (Myxomycetes, Sephomycetes, Uredinees et Ustilaginees. [Cryptogamic flora of the limestone country (Myxomycetes, Hyphomycetes, Uredinales, and Ustilaginales).] Soc. Mycol. de France Bul. 47: 157-199. 451 P213.

Peronospora arborescens on *Papaver* sp. and *P. rhoeas*, p. 170, and *Entyloma bicolor* on *Papaver* sp., p. 198, France.

(315) Mayor, E.
1922. Notes mycologiques. [Mycological notes.] Soc. Neuchateloise des Sci. Nat., Bul. 46: 3-40. 1921 (1922). 508 N39.

Entyloma fuscum on *Papaver rhoeas*, p. 20, *Erysiphe polygoni* on *P. somniferum*, p. 13, and *Peronospora arborescens* on *Meconopsis cambrica* and *P. somniferum*, p. 5.

(316) ______ 1931. Herborisations mycologiques dans les Monts de Lacaune (Tarn)-II. [Mycological forays in the Monts de Lacaune, Tarn dept., Southern France. - II.] Soc. Mycol. de France Bul. 47: 258-265. 451 P213.

Entyloma fuscum, p. 262, *Erysiphe polygoni*, p. 261, and *Peronospora arborescens*, p. 259, on *P. rhoeas*.

(317) ______ 1942-43. Contribution a l'etude de la flore mycologique du Valais. [Contribution to the study of the mycological flora of Valais.] Soc. Valaisanne de Sci. Nat., Bul. de la Murithienne 60: 73-90. 508 Si75.

Peronospora arborescens and *Entyloma fuscum* on *P. rhoeas*, p. 76 and 80, Switzerland.

(318) ______ 1949. Melanges mycologiques - III. [Miscellaneous fungi - III.] Schweiz. Bot. Gesell., Ber. 59: 268-284. 451 Sch9.

Peronospora gaeumanni (a new species) on *Meconopsis cambrica*, pp. 274-279.

(319) ______ 1954. Notes mycologiques - XIV. [Mycological notes - XIV.] Soc. Neuchateloise des Sci. Nat., Bul. 77: 5-28. 508 N39.

Erysiphe communis on *P. nudicaule*, p. 11.

(320) ______ 1958. Catalogue des Peronosporales, Taphrinales, Erysiphacees, Ustilaginales et Uredinales du canton de Neuchatel. [List of Peronosporales, Taphrinales, Erysiphaceae, Ustilaginales, and Uredinales of the canton of Neuchatel, Switzerland.] Soc. Neuchateloise des Sci. Nat., Mem. 9: 1-202. 462.12 M45.

Peronospora arborescens, p. 26 on *P. somniferum*, *P. orientale*, *P. dubium*, *P. rhoeas*; *Erysiphe communis*, p. 58-61 on *P. somniferum*, *P. nudicaule*, *P. dubium*, and *P. rhoeas*; *Entyloma fuscum*, p. 92 on *P. rhoeas*; and *Peronospora meconopsidis* on *Meconopsis cambrica*, p. 34.

(321) McAlpine, D.
1902. Fungus diseases of stone-fruit trees in Australia and their treatment. 165 pp. Dept. Agr. Victoria. 464.06 M11S.

Dematium pullulans on *Papaver* sp., p. 107.

(322) McClean, A. P. D., and Cowin, S. M.
1952/1953. Diseases of crucifers and other plants caused by cabbage black ring spot virus. So. Africa Dept. Agr. Sci. Bul. 332: 1-30, illus. 24 So84S. RAM 33: 4.

On *Papaver nudicaule*, *P. rhoeas*, and *P. somniferum*, pp. 9-10, 12, 22, 25, 27, and 28.

(323) Meer, J. H. H. van der.
1925. *Verticillium* wilt of herbaceous and woody plants. Wageningen Landbouwhoogesch., Meded. 28 (2): 1-82. 105.2 W122.

Verticillium dahliae Kleb. on *P. rhoeas*, *P. orientale*, and *Eschscholtzia californica*, pp. 14 and 26.

(324) Meffert, M.-E.
1949. Zur Geschichte der Helminthosporiose des Oelmohns. [On the history of helminthosporiosis of oil poppy.] Nachrichtenbl. f. d. Deut. Pflanzenschutz. [Berlin] N.F. 3: 104-106, illus. 464.9 N11.

(325) ______
1950. Ein Beitrag zur Biologie und Morphologie der Erreger der parasitären Blattdurre des Mohns. [A contribution to the biology and morphology of the agents of parasitic leaf withering of the poppy.] Ztschr. f. Parasitenk. 14: 442-498, illus. 442.8 Z33F. RAM 31: 85-86.

Pleospora papaveracea, *Helminthosporium papaveris*, *Dendryphium penicillatum*, and *Dendryphium peniccillatum* var. *sclerotiale* on *P. somniferum*.

(326) Mehlisch, K.
1935. Eine Blattfleckenkrankheit der Dahlie. [A leaf disease of the dahlia.] Blumen. u Pflanzenbau ver. mit die Gartenwelt. 39: 390-391. 80 G196. RAM 15: 23.

Entyloma fuscum on *P. somniferum*.

(327) Melchers, L. W.
1931. A check list of plant diseases and fungi occurring in Egypt. Kansas Acad. Sci., Trans. 34: 41-106. 500 K13T.

Peronospora arborescens on *P. somniferum*, pp. 44 and 59.

(328) Miczulska, I.
1967. Investigation on the effect of infestation of poppy (*Papaver somniferum* L.) with parasitic fungi on the content of morphine in the poppy heads. Rocz. Nauk. Rolnicz. Ser. A Roslinna 93: 189-195. 20.5 R59. RAM 48: 555.

Alternaria tenuis and *Cladosporium herbarum* on *P. somniferum* capsules.

(329) Middleton, J. T.
1943. The taxonomy, host range and geographic distribution of the genus *Pythium*. Torrey Bot. Club, Mem. 20: 1-171, illus. 451 T63M.

Pythium debaryanum on *Eschscholtzia californica*, pp. 98-107; *Pythium megalacanthum* on *P. nudicaule* and *P. rhoeas*, pp. 115-116; *Pythium oligandrum* on *P. rhoeas*, pp. 114-115; *Pythium spinosum* on *P. rhoeas*, pp. 111-114; and *Pythium ultimum* on *P. nudicaule*, pp. 86-91.

(330) Milatovic, I.
1949. Jedna vrlo opasna bolest Maka - pleosporoza (*Pleospora calvescens* [Fr.] Tul.). [A very dangerous disease of poppies - Pleosporosa (*P. calvescens* [Fr.] Tul.).] Biljna Proizvodnja 2: 136-140, illus. 64.8 B49.

P. somniferum.

(331) ______
1952. A contribution to the biology of *Pleospora calvescens* (Fr.) Tulasne on poppy. Poljoprivredna Znanstvena Smotra 13: 121-132, illus. 21.5 Z13. RAM 33: 180-181.

On *P. rhoeas*.

(332) Minev, K.
1950. Manual of the diseases of cotton, tobacco, and other plants grown for industrial use. [Transl. from Macadonian.] 95 pp. Skopje Zadruzen zivot. 464.09 M66.

Bacterium papaveri, pp. 53-56, *Peronospora arborescens*, pp. 33-36, and *Pleospora calvescens*, pp. 37-41 on *P. somniferum*.

(333) Minkevicius, A.
1937. Lietuvos rudziu (Uredinales) floros Metmenys. [Characteristics of the Uredinales of Lithuania.] Vytauto Didz. Univ. Mat.-Gamt. Fak. Darb. (Kaunas) 11 (4): 333-450. 511 K16.

Melampsora magnusiana on *Chelidonium majus*, p. 353.

(334) Minkiewicz, S.
1941. Poland: chief diseases and pests observed in 1940. Internatl. Bul. Plant Prot. 15: 4M-6M. 464.8 In8.

Alternaria on *P. somniferum*, p. 5M.

(335) Minz, G.
1953. Plant parasitic nematodes. 38 pp. Min. Agr. Res. Sta. Rehovot, Israel. 436 Is7.

Meloidogyne spp. on *P. somniferum*, p. 35. Biol. Abs. 28, No. 9563.

(336) Misko, L. A.
1963. Gel'mintosporioz Maka. [Helminthosporiosis of poppy.] Zashch. Rast. ot Vred. i Boleznei 8 (10): 56, illus. 421 Z1. RAM 43: 1371.

(337) Misko, L. A.
1973. Changes in tissues of *Papaver* in relation to damage by *Helminthosporium papaveris*. [Transl. from Russ.] Moscow Glav. Bot. Sad, Biul. 87: 110-113, illus. 451 M854.

P. somniferum.

(338) Mitter, J. H., and Tandon, R. N.
1930. The fungus flora of Allahabad — Part II. Indian Bot. Soc. Jour. 9: 190-198. 450 J821.

Oidium erysiphoides on *P. rhoeas*, p. 198, and *Peronospora arborescens* on *Argemone mexicana*, p. 191.

(339) Miura, M.
1928. Flora of Manchuria and East Mongolia. Part III. Cryptogams, Fungi. So. Manchuria Railway Co. Agr. Exp. Sta., Industr. Mat. (Sangyo Shiro) 27. 549 + 39 pp. 22.5 So82.

Peronospora arborescens on *P. somniferum* var. *nigrum* and *P. alpinum*, pp. 44-45.

(340) Miyake, I.
1913. Studien über chinesische Pilze. [Studies on Chinese fungi.] Bot. Mag. [Tokyo] 27: 37-54. 450 B651.

Septoria chelidonii on *Chelidonium majus*, p. 50.

(341) Moesz, G.
1921. Adatok Lengyelorszag gombaflorajanak ismeretehez. I. Közlemeny. [Contribution to the knowledge of the fungus flora of Poland. First communication.] Bot. Kozlemenyek 18: 22-28. 450 N85.

Septoria chelidonii on *Chelidonium majus*, p. 26.

(342) ______
1923. Die Pilzrankheiten der ungarischen Medizinalpflanzen. [The fungus diseases of Hungarian medicinal plants.] Internat. Conf. Phytopath. and Econom. Entomol., Rpt. 1923: 280-283. 464.9 In8.

Septoria chelidonii on *Chelidonium majus*, p. 281.

(343) ______
1938. Fungi Hungariae. II. Archimycetes et Phycomycetes. [Fungi of Hungary. II. Archimycetes and Phycomycetes.] Budapest Magyar Nemzeti Muz., Ann. Hist. Nat. 31 (Pars. Bot.): 58-109. 410.9 B85A.

Peronospora arborescens on *P. somniferum* and *P. rhoeas*, p. 84.

(344) ______
1950. A Kárpát-Medence Uszöggombái. [The smut fungi of the Carpathian basin.] 256 pp., illus. Budapest, Egyetimi Konyvkiado. [Library ?]

Entyloma fuscum on *P. dubium*, *P. rhoeas*, and *P. argemone*, pp. 180-181.

(345) Molliard, M. M.
1895. Recherches sur les cecidies florales. [Researches upon flower galls.] Ann. des Sci. Nat. Ser. VIII, Bot. 1: 67-245. 450 An75.

Peronospora arborescens on *P. rhoeas*, *P. argemone*, and *P. dubium*, pp. 96-97 and 98-99.

(346) Montoro Guarch, A.
1935. Contribucion fitopatologica 1935. [Phytopathological contribution 1935.] Montevideo Univ. (Uruguay) Facult. Agron., Rev. 11: 9-24. 1934 (1935). 102.5 M76R.

Peronospora arborescens on *P. somniferum*, attack severe, but *P. rhoeas* in same vicinity not attacked, pp. 22 and 24.

(347) Morozov, B.
1928. Survey of diseases of cultivated and useful ornamental plants in Stavropol district in 1927. [Transl. from Russ.] Stavropol. Stan. Zashch. Rast. ot Vred., Izv. 4: 32-49. 423.92 St2T.

Peronospora arborescens on *P. somniferum*, mild injury, p. 42.

(348) Mraz, F.
1960. Vliv škodliveho působeni houby *Helminthosporium papaver* Henning na vynosy maku v kraji Karlovy Vary v letech 1957 a 1958. [Influence of the harmful effect of the fungus *H. papaveris* on poppy yields in the region Karlovy Vary in the years 1957 and 1958.] Sborn. Ceskoslav. Akad. Zemed. Ved. Rostl. Vyroba 6: 1083-1094, illus. 64.9 C33. RAM 40: 374.

(349) ______
1963. Studium učinnosti mořidel na konidie houby *Helminthosporium papaveris* Henning. [A study of the influence of disinfectants on the conidia of *H. papaveris* Henning.] Rostlinna Vyroba 9: 51-64, illus. 64.9 C33. Hort. Abs. 33 #7833.

(350) ______
1964. Způsob zjištěni podilu "zdravotniho efektu heterozy "na" efektu vynosovem." [The manner of ascertaining the share of "health effect of heterosis" on "yield effect."] Rostlinna Vyroba 10: 909-912. 64.9 C33.

Helminthosporium papaveris on *P. somniferum*.

(351) ______
1965. Dobra připrava osiva máku se vždy vyplati. [Treatment of poppy seeds pays off.] Za Vyosoku Urodu 13: 58-59, illus. 64.8 Z12.

Helminthosporium papaveris on *P. somniferum*.

(352) ______ and Martinek, V.
1965. The effect of heterosis upon the infestation of poppy heads with the fungus *Helminthosporium papaveris* Hennig. I. The health effect of heterosis. Sborn. UVTI (Ustav Vedeckotech. Inform.), Genet. Slechteni 1 (4): 25-36, illus. QH431.A1S25.

(353) ______ and Martinek, V.
1966. The influence of heterosis on infection of poppy heads by the fungus *Helminthosporium papaveris* Hennig. II. Ratio between health effect of heterosis and yield effect. Sborn. UVTI (Ustav Vedeckotech. Inform.) Genet. Slechteni 2: 169-176. QH431.A1S25.

(354) ______ Kodys, F., Sedivy, J., and Severa, M. F.
1964. "Atlas" of diseases and pests of oil plants. [Transl. from Russ.] Landwirtschaftlicher Staatsferlag, Prag in Zusammenarbeit mit veb Deutscher Landwirtschaftsverlag, Berlin. 2d ed. 200 pp. illus. SB608.035A8.

Botrytis cinerea (*Botryotinia fuckeliana*), *Erwinia carotovora*, *Helminthosporium papaveris*, *Peronospora arborescens*, *Pleospora herbarum* (*Stemphylium botryosum*) poppy mosaic virus, *Sclerotinia sclerotiorum*, *Xanthomonas papavericola*, and yellowing virus on *P. somniferum*.

(355) Muehle, E.
1947. Die Krankheitserscheinungen und Schadbilder am mohn (*Papaver somniferum* L.) und ihre Erreger. [Diseases and injuries of the poppy (*P. somniferum* L.) and the organisms which cause them.] Pharmazie 2 (7): 334-335. Mid-Atlantic Reg. Med. Libr.

Helminthosporium papaveri, *Bacillus papaveris*, and *Verticillium*.

(356) Mueller, A. S., and Chupp, C.
1936. Uma segunda contribuicão a's *Cercosporae* de Minas Geraes. [A second contribution to the *Cercosporae* of Minas Geraes.] Rio de Janeiro Inst. Biol. Veg., Arch. 3: 91-98. 451 R472.

Cercospora papaveri on *Papaver* sp. in Brazil, p. 95.

(357) Mueller, K. R.
1943. Beachtet Mohnschädigungen durch Pflanzenfeinde. [Observed poppy injuries from plant enemies.] Landesbauernschaft Sachsen-Anhalt Wochenbl. 101: 209. 18 Sa9.

Dendryphium penicillatum, *Entyloma fuscum*, and *Helminthosporium papaveris* on *P. somniferum*.

(358) Mundkur, B. B.
1938. Fungi of India. Supplement I. India Imper. Council Agr. Res., Sci. Monog. 12, 54 pp. 22 Im72.

Peronospora gaeumannii on *Argemona mexicana*, p. 8.

(359) ______
1940. A second contribution towards a knowledge of Indian Ustilaginales. Fragments XXVI-L. Brit. Mycol. Soc. Trans. 24: 312-336. 451 B76.

Entyloma fuscum on *P. rhoeas*, p. 331.

(360) Murashkinsky, K. E., and Sieling, M. K.
1928. Materials for a fungus flora of Altai and Saiany. [Transl. from Russ.] Sibirsk. Inst. Selsk. Khoz. i Lesovodstva, Trud. 10 (4): 1-31. [Library ?]

Heteropatella lacera Fckl., p. 21, on *Papaver alpinum*.

(361) Nagornyi (Nagorny), P. I.
1913. Fungus parasites collected in the government of Stavropol, USSR, during the summer of 1911 and 1912. [Transl. from Russ.] Zhur. Bolezni Rastenii 7: 87-125. 464.8 Z6.

Peronospora arborescens on *P. somniferum*, pp. 94 and 97 and *Septoria chelidonii* on *Chelidonium majus*, p. 113.

(362) Naomoff (see Naumov)

(363) Nattrass, R. M.
1937. Annual report of Plant Pathologist for 1936. Cyprus Dept. Agr., Ann. Rpt. 1936: 50-56. 21 C99.

Entyloma fuscum on *P. rhoeas* and *P. somniferum*, p. 55.

(364) Naumann, K.
1958. Über das Verhalten verschiedener morphologischer Rassen von *Helminthosporium papaveris* Saw. gegenüber unterschiedlich aktiven Strahlenpilzstämmen. [On the reaction of different morphological strains of *H. papaveris* to actinomycete strains of differing activity.] Arch. fur Mikrobiol. 28: 417-442, illus. 442.8 AR26. RAM 38: 186.

(365) Naumov (Naomoff), N.
1914. Materiaux pour la flore mycologique de la Russie. Fungi ussurienses I. [Materials for the mycological flora of Russia. Fungi of the Ussuri Oblast I.] Soc. Mycol. de France, Bul. 30: 64-83. 451 P213.

Peronospora arborescens on *P. somniferum,* p. 66.

(366) ______
1954. The fungus flora of the Leningrad region. [Transl. from Russ.] V. 1, 182 pp., illus. Moscow. 462.16 N22.

Peronospora arborescens on *P. somniferum,* p. 96.

(367) Navarro de Palencia, J.
1954. Los ataques del '*Fusarium*' a la adormidera. [The attacks of *Fusarium* upon the opium poppy.] Spain Inst. Nac. de Invest. Agron., Bol. 14 (31): 377-381. 105.6 Sp14. RAM 34: 398.

Fusarium martii, F. oxysporum var. *cubense.*

(368) Neergaard, P.
1937. Aarsberetning fra J. E. Ohlsens Enkes Plantepatologiske Laboratorium, April 1, 1936 - Marts 31, 1937. [Annual report from the phytopathological laboratory of J. E. Ohlsen's widow from April 1, 1936 to March 31, 1937.] Ohlsens Enke Plantepatol. Lab., Aarsberet. 2: 1-11. 464.9 Oh4. RAM 17: 96.

Helminthosporium papaveris on *Papaver somniferum, P. paeoniflorum, P. mursellii,* and *P. rhoeas,* p. 10.

(369) ______
1938. Annual report from the phytopathological laboratory of J. E. Ohlsen's widow, seed growers, Copenhagen, April 1, 1937 - March 31, 1938. Ohlsens Enke Plantepatol. Lab., Aarsberet. 3: 3-12. 464.9 Oh4.

Helminthosporium papaveris on *P. alpinum, P. nudicaule, P. umbrosum;* and *Phoma rhoeadis* on *P. alpinum, P. glaucum, P. nudicaule, P. orientale,* and *P. paeoniflorum,* p. 11.

(370) ______
1940. Seed-borne fungus diseases of horticultural plants. Internatl. Seed Test. Assoc., Proc. 12 (1): 47-71. 61.9 In84P.

Dendryphium sp., *D. penicillatum, Fusarium scripi* var. *caudatum, Helminthosporium papaveris,* and *Phoma rhoeadis* *Papaver* spp., pp. 55-56; *Peronospora arborescens* on *Meconopsis* sp., p. 55.

(371) ______
1940. Annual Report from the phytopathological laboratory of J. E. Ohlsens Enke, seed growers, Copenhagen, 1939/1940. Ohlsens Enke Plantepatol. Lab., Aarsberet. 5. 14 pp. 464.9 Oh4.

Dendryphium penicillatum on *P. nudicaule* and *P. rhoeas*, p. 13.

(372) ______
1941. Annual report from the phytopathological laboratory of J. E. Ohlsen's widow, seed growers, Copenhagen, April 1, 1940 to March 31, 1941. Ohlsens Enkes Plantepatol. Lab., Aarsberet. 6. 20 pp. 464.9 Oh4.

Alternaria sp. on *P. rhoeas*, first report for Denmark, p. 17.

(373) ______
1951. 15th and last annual report from the phytopathological laboratory of the J. E. Ohlsen's widow, seed growers, Copenhagen, August 1, 1949 - July 31, 1950. Ohlsens Enke Plantepatol. Lab., Aarsberet. 15. 33 pp. 464.9 Oh4. RAM 31: 224.

Pleospora calvescens in seed of *P. somniferum*, *P. somniferum* var. *paeoniflora*, *P. glaucum*, and *P. rhoeas*, p. 28.

(374) ______
1957. Annual report for June 1, 1955 to May 31, 1956 from the Plant Protection Service of Denmark on seed pathological testing. (Denmark) Statens Plantetilsyn, Aarsberet; verdørende Frøpatol. Kontrol 8th. 15 pp. 464.9 D41. RAM 38: 54.

Pleospora calvescens seed borne on *P. somniferum* and *P. rhoeas*.

(375) Nicolas, G., and Aggery, B.
1952. Notes phytopathologiques. Neuvieme note. [Phytopathological notes. 9th note.] Toulouse Soc. d'Hist. Nat. Bul. 87: 277-298.

Entyloma bicolor on *P. rhoeas* in France, p. 281.

(376) Nienhaus, F.
1960. Das Wirtsspektrum von *Phytophthora cactorum* (Leb. & Cohn) Schroet. [The host range of *Phytophthora cactorum.*] Phytopath. Ztschr. 38: 33-68. 464.8 P562.

P. argemone, P. rhoeas, and *Chelidonium majus,* exptl. infect., p. 49. Natural infect. on *Eschscholtzia californica* in Holland, p. 40.

(377) Noble, R. J., Hynes, H. J., and others.
1937. The occurrence of plant diseases in New South Wales with particular reference to the 3-year period ending 30th June, 1936. N.S. Wales Dept. Agr. Sci. Bul. 57: 1-42, illus. 23 N47S.

Peronospora arborescens, Phytophthora cryptogea, and tomato spotted wilt virus on *P. nudicaule,* p. 42.

(378) ______ Hynes, H. J., and others.
1937. Plant diseases recorded in New South Wales. N.S. Wales Dept. Agr. Sci. Bul. 46, Sup. 1: 1-7. 23 N47S.

Heterodera marioni and *Phytophthora cryptogea* on *P. nudicaule,* p. 5.

(379) Nolte, H.-W.
1951. Krankheiten und Schädlinge der Ölfrüchte. [Diseases and pests of oil crops.] 64 pp., illus. Radebeul and Berlin. 464.09 N72.

Peronospora arborescens, Erysiphe sp., and *Helminthosporium papaveris* on *P. somniferum,* pp. 44-46.

(380) ______
1952. Alte und neue Mohnschädlinge. [Old and new poppy parasites.] Deut. Landw. 3: 379-382. 18 D4822.

Helminthosporium papaveris and *Peronospora arborescens* on *P. somniferum,* p. 380.

(381) Numic, R.
1962. Contribution to the knowledge of the parasitic fungi in Bosanska Posavina (Yugoslavia). Zashtita Bilja 67/68: 141-146. 464.8 Z1.

Pleospora papaveri on *P.* spp., pp. 143 and 146.

(382) O'Connor, P.
1936. A contribution to knowledge of the Irish fungi. Roy. Dublin Soc., Sci. Proc. 21 N.S.: 381-417. 501 D85.

Septoria chelidonii on *Chelidonium majus*, p. 407.

(383) Oescu, C. V., and Radulescu, I. M.
1933. Peronosporacees recoltes dans la depression de la Riviere Jijia. II. [Peronosporaceae collected in the valley of the Jijia River. II.] Jassy Univ., Ann. Sci. 18: 423-442. 475 J31.

Peronospora arborescens on *P. somniferum* in Romania, p. 434.

(384) Ogilvie, L.
1935. Spotted wilt of tomatoes and its control. Bristol Univ. Agr. and Hort. Res. Sta., Ann. Rpt. 1934: 170-174. 84 B77.

Tomato spotted wilt on *P. nudicaule* in Australia and England and on *P.* sp. in California, pp. 171, 172, and 173.

(385) Oudemans, C. A. J. A.
1897. Revision des Champignons tant superieurs qu'inferieours trouves jusqua ce jour dans les Pays-bas. Tome II. Phycomycetes. Pyrenomycetes. [Revision of the higher and lower fungi found up to the present time in the Netherlands.] V. II. Phycomycetes - Pyrenomycetes. 498 pp. Amsterdam. 503 Am8V.

Peronospora arborescens on *P. dubium*, p. 18, and *Pleospora calvescens* on *Papaver* sp., pp. 344-345.

(386) ______
1905. Catalogue raisonne Champignons des Pays-Bas. [Systematic catalog of the fungi of the Netherlands.] Amsterdam Koninkr. Akad. van Wetensch. Verhandel. 11 (2): 1-559. 503 Am8V.

Pyrenophora pellita on *P.* sp., p. 261; *Peronospora arborescens* on *P. somniferum* and *P. dubium*, p. 382; and *Entyloma fuscum* on *Papaver rhoeas*, p. 234.

(387) Pai, C. K.
1957. Notes on the Peronosporaceae in northeastern China. Acta. Phytopath. Sinica 3: 137-154, illus. 464.8 Ac8.

Peronospora arborescens on *P. alpinum* and *P. somniferum*, p. 143; and *Peronospora chelidonii* on *Chelidonium majus*, p. 144.

(388) Palm, B.
1908. Till kännedomen om Stockholmstraktens svampflora. [An account of the fungi of the Stockholm area.] Svensk Bot. Tidskr. 2: 38-48. 450 Sv2.

Melampsora magnusiana on *Chelidonium majus*, p. 39.

(389) ———
1935. Några parasitsvampar från södra Sverige. [Some parasitic fungi from southern Sweden.] Bot. Not. 1935: 412-416. 450 B656.

Peronospora arborescens on *P. dubium*, p. 413.

(390) Palti, J., and Chorin, M.
1964. Peronosporaceae in Israel. Phytopath. Mediter. 3: 50-56. 464.8 P565.

Peronospora arborescens on *P. rhoeas* and *P. somniferum*; *Peronospora argemones* on *P. argemone*; and *Peronospora cristatum* on *P. hybridum*, p. 53.

(391) Panfilova, T. S., and Gaponenko, N. I.
1963. Microflora of the Angren River Basin. [Transl. from Russ.] 208 pp. Acad. Nauk. Uzbek. SSR. 462.16 P19.

Peronospora arborescens on *P. somniferum* and *P. pavonium* Schrenk, pp. 55-56; *Stemphylium alternariae* (Cooke) Sacc. on *P. pavonium*, p. 167; *Erysiphe cichoracearum* DC. f. *papaveris* Pot. on *P. angrenicum* Pazij, p. 62.

(392) Pantidou, M. E.
1973. Fungus-host index for Greece. 382 pp. Benaki Phytopath. Inst., Athens. QK608.G9P3.

Chaetomella atra, *Entyloma fuscum*, and *Peronospora arborescens* on *P. rhoeas*, pp. 38, 70, and 131.

(393) Pape-Kiel, H.
1922. Krankheiten und Beschadigungen der Kulturpflanzen im Jahre 1920. [Diseases and pests of cultivated plants in 1920.] Germany Biol. Reichsanst. f. Land u Forstw., Mitt. 23: 26-101. 410.9 G31M.

Peronospora arborescens and *P. parasitica* on *P.* spp., p. 68.

(394) ______
1933. Fälscher Mehltau am Mohn. [False mildew of poppy.] Gartenwelt 37: 289-290. 80 G196. RAM 13: 445.

Peronospora arborescens on *P. somniferum*.

(395) ______
1944. Die wichtigsten Ölmohn krankheiten und Schädlingen und ihre Bekämpfung. [The most important poppy diseases and pests and their control.] Deut. Landw., Mitt. 59: 734-736, illus. 18 D48M.

Peronospora arborescens, *Helminthosporium papaveri*, and *Pleospora calvescens* on *P. somniferum*.

(396) Parisi, R.
1921. Di alcuni parassiti delle piante medicinali e da essenze. [Some parasites of medicinal and aromatic plants.] Naples Univ. Bul. dell'Orto. Bot. 6: 285-296. 451 N16. Also published in Riv. di Patol. Veg. 11: 1-16. 1921. 464.8 R 52. RAM 1: 303-304.

Macrosporium papaveris on *P. somniferum*.

(397) ______
1924. Contribuzione alla micologia dell'Italia merdionale. [Contribution to the mycology of southern Italy.] Naples Univ. Bul. dell'Orto Bot. 7: 35-66. 451 N16.

Name of *Macrosporium papaveris* changed to *M. bresadolae* on *P. somniferum*, p. 60.

(398) Patel, M. K., Kamat, M. N., and Bhide, V. P.
1949. Fungi of Bombay, Sup. I. Indian Phytopath. 2: 142-155. 464.8 In2.

Erysiphe cichoracearum and *Sclerotium rolfsii* on *P. somniferum*; and *Oidium* sp. on *Argemone mexicana*, pp. 144 and 149.

(399) Pathak, N. C., and Ghosh, R. N.
1962. Fungi of Uttar Pradesh. Lucknow (India) Natl. Bot. Gard. Bul. 62, 146 pp. 451 L962.

Oidium erysiphoides Fr. on *P. rhoeas*, p. 118; *Peronospora arborescens* on *P. somniferum* and *Argemone mexicana*; and *Peronospora gaumanni* on *Argemone mexicana*, p. 19, India.

(400) Patouillard, M. N.
1897. Additions au catalogue des Champignons de la Tunisie. [Additions to the list of fungi of Tunisia.] Soc. Mycol. de France, Bul. 13: 197-216. 451 P213.

Peronospora arborescens on *P. rhoeas*, p. 209.

(401) Pavgi, M. S., and Singh, R. A.
1971. Parasitic fungi from North India - VIII. Mycopath et Mycol. Appl. 43: 117-125. 450 M994.

Cercospora papavericola Chupp on *P. rhoeas*.

(402) ______ and Upedhyay, H. P.
1964. Parasitic fungi from North India - II. Mycopath et Mycol. Appl. 24: 347-354. 450 M994.

Cercospora papaveri Nakata on *P. somniferum*, p. 350.

(403) Payak, M. M.
1950. Some parasitic fungi collected in the vicinity of Banaras. Indian Phytopath. 2: 190-192. 1949 [1950]. 464.8 In2.

Peronospora gaumanni on *Argemone mexicana*, p. 190, India

(404) Perseca, E., Mlesnita, L., and Mlesnita, V.
1960. Some poppy varieties and their behavior against the attack of *Pleospora papaveracea* (De Not.) Sacc. (Cluj) Inst. Agron. "Dr. Petru Groza," Lucrari Sti. 16: 201-205. 21 C622.

(405) Peterson, J. L., and Davis, S. H., Jr.
1970. Anthracnose of poppy caused by *Gloeosporium*. U.S. Agr. Res. Serv. Plant Dis. Rptr. 54: 1037-1039, illus. 1.9 P69P.

Gloeosporium (perfect stage *Glomerella cingulata*) on *P. orientale*.

(406) Pethybridge, G. H., Moore, W. C., and Smith, A.
1934. Fungus and other diseases of crops, 1928-1932. Gt. Brit. Min. Agr. and Fish. Bul. 79, 117 pp. 10 G794B.

Helicobasidium purpureum on *P. orientale*, and *Peronospora arborescens* on *P. alpinum* and *Meconopsis* sp., p. 94.

(407) Petrak, F.

1920\. Der mykologische Nachlass Josef Jahn's ein Beitrag zur Pilzflora des Egerlandes. [The mycological legacy of Joseph Jahn's "A contribution to the fungus flora of Egerlandes."] Ann. Mycol. 18: 105-135. 450 An76.

Peronospora arborescens on *P. dubium*, p. 131, Czechoslovakia.

(408) ______

1921\. Beiträge zur Pilzflora von Mähren und Österr-Schlesien. [Contributions to the fungus flora of Moravia and Austrian Silesia.] Ann. Mycol. 19: 273-295. 450 An76.

Pleospora pellita and *P. papaveracea* on *P. somniferum*, p. 278.

(409) ______

1923\. Beiträge zur Pilzflora von Sternberg in Mähren. [Contribution to the fungus flora of Sternberk in Moravia, Czechoslovakia.] Ann. Mycol. 21: 107-132. 450 An76.

Septoria chelidonii on *Chelidonium majus*, p. 130.

(410) ______

1925\. Beiträge zur Pilzflora Sudost-Galiziens und der Zentralkarpathen. [Contribution to the fungus flora of south-east Galicia and the Central Carpathians.] Hedwigia 65: 179-330. 450 H35.

Peronospora arborescens on *P. somniferum*, p. 196.

(411) ______

1934\. Mykologische Notizen. XII. [Mycological Notes XII.] Ann. Mycol. 32: 317-447. 450 An76.

Physalospora polaris p.p. [= *Mycosphaerella tassiana*] on *P. nudicaule*, p. 381.

(412) ______

1941\. Schedae ad Cryptogamas exsiccatas, editae a Museo historiae naturalis Vindobonensi. Cent. XXXIII-XXXIV. [Labels for the dried specimens of Cryptogams published by the Vienna Natural History Museum. Cent. XXXIII-XXXIV.] Vienna Ann. des Naturhist. Mus. in Wien 51: 347-373. 1940 (1941). 410.9 V672.

Entyloma fuscum on *P. somniferum*, p. 363.

(413) ______
1947. Plantae sinenses a Dre. H. Smith annis 1921-1922, 1924 et 1934 lectae. XLII. Micromycetes. [Plants of China from Prof. H. Smith's lectures for the years 1921-1922, 1924, and 1934. XLII. Micromycetes.] Göteborgs Bot. Trädgard, Meddel. 17: 113-164. 451 G712.

Mycosphaerella tassiana on *P. nudicaule*, p. 138.

(414) ______ and Esfandiari, E.
1941. Beiträge zur Kenntnis der Iranischen Pilzflora. [Contributions to the knowledge of the Iranian fungus flora.] Ann. Mycol. 39: 204-228. 450 An76.

Peronospora arborescens on *P. somniferum*, p. 204.

(415) Petri, L.
1942. Rassegna dei casi fitopatologici osservati nel 1942. [Review of phytopathological records noted in 1942.] [Rome] Staz. di Patol. Veg. Bol., Ser. II, 22: 197-244. 464.9 R662.

Alternaria, *Macrosporium*, *Stachylidium*, and *Trichothecium* on capsules of *P. somniferum*, p. 240.

(416) Picbauer, R.
1931. Addenda ad floram Cechoslvakiae mycologicam, V. [Additions to the mycological flora of Czechoslovakia, V.] Brne, CSR Sborn. Vysoke Skoly Zemed., Fak. Lesn. 18: 1-30. 105.92 B835.

Peronospora arborescens on *P. rhoeas*, p. 3.

(417) Pietkiewicz, T. A.
1958. Z badan nad chorobami roslin oleistych. [Contributions to diseases of oleaginous crops.] Rocz. Nauk. Rolnicz. Ser A - Roslinna 78: 199-218. 20.5 R59.

Peronospora arborescens on *P. somniferum* and *P.* spp., p. 218.

(418) Poeteren, N. van
1923. Verslag over de werkzaamheden van den plantenziektenkundigen dienst in het jaar 1922. [Report on the activities of the Phytopathological Service in 1922.] Wageningen Plantenziektenkund. Dienst. Verslag. en Meded. 31: 1-59. 464.9 W122.

Peronospora arborescens on *P. somniferum*, pp. 25-26.

(419) ______
1929. Verslag over de werkzaamheden van den plantenziektenkundigen dienst in het jaar 1927. [Report on the activities of the Phytopathological Service in 1927.] Wageningen Plantenziektenkund. Dienst. Verslag. en Meded. 55: 1-93. 464.9 W122.

Dendryphium penicillatum on *P. somniferum*, p. 17.

(420) ______
1933. Verslag over de werkzaamheden van den plantenziektenkundigen dienst in het jaar 1932. [Report on the activities of the Phytopathological Service in 1932.] Wageningen Plantenziektenkund. Dienst. Verslag. en Meded. 72: 1-148. 464.9 W122. RAM 13: 10.

Dendryphium penicillatum on *P. somniferum*, pp. 25-26.

(421) Poirault, G.
1890. Les Uredinees et leurs plantes nourricieres. [The rusts and their host plants.] Jour. de Bot. 4: 229-234. 450 825.

Caeoma chelidonii on *Chelidonium majus*, p. 231.

(422) Pospelov, A. G., Zaprometov, N. G., and Domasheva, A. A.
1957. Gribnaia flora Kirgizskoi SSR, Vypusk I. Sistematichesko-vidovoi sostav i geograficheskoe rasprostranenie. [Fungi of the Kirghiz SSR, No. I. Systematic list of species and geographical distribution.] 128 pp. Frunze, Kirgizskoi SSR. 462.16 P82.

Cladosporium herbarum, p. 90, *Erysiphe cichoracearum* f. *papaveris*, p. 17, *Helminthosporium papaveris*, p. 92, and *Peronospora arborescens*, p. 9, on *P. somniferum*.

(423) Potebnia, A.
1907. Mycologische Studien. [Mycological studies.] Ann. Mycol. 5: 1-28. 450 An76.

Erysiphe communis, *Heterosporium groenlandicum*, and *Oidium erysiphoides* on *P. somniferum*, pp. 13 and 21; and *Septoria chelidonii* on *Chelidonium majus*, p. 19.

(424) Prasad, S. S., and Sinha, B. D.
1962. Fungi causing plant diseases at Muzaffarpur. I. India Natl. Acad. Sci. Proc., Sect. B., 32: 435-438. 513 AL5.

Peronospora arborescens on *Argemone mexicana,* p. 435.

(425) Preston, D. A.
1945. Host index of Oklahoma plant diseases. Okla. Agr. Exp. Sta., Tech. Bul. T-21. 168 pp. 100 Ok4.

Septoria argemones on *Argemone mexicana,* p. 15.

(426) ______
1947. Host index of Oklahoma plant diseases, supplement, 1947. Okla. Agr. Expt. Sta., Tech. Bul. T-21 (Sup.) 39 pp. 100 Ok4.

Septoria argemones on *Argemone alba* and *A. intermedia,* p. 6.

(427) Prochaska, M.
1928. Beobachtungen über das Auftreten von *Peronospora arborescens* (fälscher Mehltan) and *Papaver somniferum.* [Observations on the behavior of *Peronospora arborescens* (false mildew) on *Papaver somniferum.*] Fortschr. Landw. 3: 165-167, illus. 19 F77. RAM 7: 535.

(428) Prochazka, F.
1952. The connection between several morphological characteristics of the poppy, between the quantity and size of the seeds, resistance to black rot (*Cladosporium herbarum*) of the pods of the poppy and utilization of these observations for selection. Ceskoslov. Akad. Zemedel. Sborn. 25: 13-20, illus. 19.5 C332C.

On *P. somniferum.*

(429) Protsenko, E. P.
1954. Pathogenic mycoflora of the Main Botanical Garden. [Transl. from Russ.] [Moscow] Glav. Bot. Sad. Trudy 4: 183-204. 451 M854T.

Botrytis cinerea and *Peronospora arborescens* on *P. somniferum,* pp. 187 and 194.

(430) Quelet, L.
1892. Descriptions des Champignons nouveaux les plus remarquables reprensentee dans les aquarelles de Louis de Brondeau avec des observations sur le Genre Gyrocephalus Pers. et Ombrophila Fr. [Descriptions of new fungi. The most remarkable representation in the water colors of Louis de Brondeau, with observations on the genera of Gyrocephalus, Pers. and Ombrophila, Fr.] Rev. Mycol. 14: 64-67, illus. (not in color) 450 R329.

Dacrymyces papaveris on *P. somniferum*, p. 65.

(431) Raabe, A.
1938. Parasitische pilze umgebung Tubingen. Ein Beitrag zur kryptogamenflora Sudwestdeutschlands. [Parasitic fungi in the vicinity of Tubingen. A contribution to the fungus flora of southwest Germany.] Hedwigia 78: 1-106. 450 H35.

Peronospora arborescens on *P. rhoeas*, p. 9.

(432) Raabe, R. D.
1957. Perithecia of *Erysiphe polygoni* on Iceland poppy. U.S. Agr. Res. Serv. Plant Dis. Rptr. 41: 694-695, illus. 1.9 P69P.

On *P. nudicaule*.

(433) Rabenhorst, L.
1878. Fungi europaei exsiccati. Editio nova. Series II. Centuria 5 (25). [European fungi exsiccati. New edition. Series II. Centuria 5 (25).] Hedwigia 17: 171-176. 450 H35.

Original descriptions are given for *Entyloma bicolor* and *E. fuscellum* on *Papaver rhoeas*, pp. 173-174.

(434) Radulesçu, E., and Perseca, E.
1964. Über die Biologie des Pilzes *Pleospora papaveracea* (De Not.) Sacc. [On the biology of *Pleospora papaveraceae* (De Not.) Sacc.] Rev. Rumania Biol., Ser. Bot. 9: 19-33. QK1.R4. RAM 44: 221.

On *P. somniferum*.

(435) ______ Perseca, E., and Docea, E.
1961. Contributii la combaterea helminthosporiozei Macului (*Pleospora papaveracea* [De Not.] Sacc.) prin myloace agrotehnice si chimice. [Contributions to the control of helminthosporiosis of poppies (*P. papaveracea*) by agrotechnical and chemical methods.] Bucharest Inst. Agron. "N. Balcescu" Lucrari Stiint. Ser. B, 5: 333-342. 106.4 B854B. RAM 44: 35.

Pleospora papaveracea on *P. somniferum.*

(436) Raievs'ka, I. O., and Komarets'ka, K. M.
1949. Studying the microflora in the Kanev Biogeographical Preserve. [Transl. from Ukrain.] Kiev Univ., Naukovi Zapsky 8 (6): 51-62. 451 K544.

Septoria chelidonium on *Chelidonium majus,* p. 60.

(437) Ramakrishnan, K., and Subramanian, C. V.
1952. The fungi of India - 2d supplement. Madras Univ. Jour. Sect. B, 22: 1-65. 513 M26.

Entyloma fuscum on *P.* spp., p. 19.

(438) Ram Ayyar (Ayyar), C. S.
1927. A bacterial soft rot of garden poppy. India Dept. Agr., Mem. Bact. Ser. 2: 29-33. 448.2 In2. RAM 7: 242.

Bacillus papaveris Ram Ayyar on *P. rhoeas* and *Argemone mexicana.* The latter was slightly susceptible when inoculated.

(439) Ranojevic, N.
1910. Zweiter Beitrag zur Pilzflora Serbiens. [Second contribution to the fungus flora of Serbia.] Ann. Mycol. 8: 347-402. 450 An76.

Peronospora arborescens, p. 351, on *P. dubium* and *P. rhoeas; Pleospora papaveracea,* p. 362, on *P. rhoeas.*

(440) ______
1914. Dritter Beitrag zur Pilzflora Serbiens. [Third contribution to the fungus flora of Serbia.] Ann. Mycol. 12: 393-421. 450 An76.

Erysiphe polygoni on *P. dubium,* p. 395.

(441) ______
1938. Beitrag zur Pilzflora Mazedoniens. [Contribution to the Macedonian fungus flora.] Hedwigia 77: 233-242. 450 H35.

Peronospora arborescens on *P. somniferum*, p. 236, and *Erysiphe polygoni* on *P. dubium*, p. 235.

(442) Rao, R.
1968. A new species of *Ovularia* from India. Mycopath. et Mycol. Appl. 34: 47-48, illus. 450 M994.

Ovularia indica on *Argemone mexicana* (type).

(443) Rauhala, A.
1958. Erysiphaceae in Finnia inventae et distributio hucusque cognita. [Powdery mildews of Finland with regard to their currently known distribution.] Karstenia 4: 14-26. 451 K14.

Erysiphe communis on *P. somniferum* in Finland, p. 16.

(444) Rayss, T.
1938. Nouvelle contribution a l'etude de la mycoflora de Palestine. [New contribution to the study of the mycoflora of Palestine.] Palestine Jour. Bot., (J. Ser.) 1: 143-160. 450 P17.

Peronospora arborescens on *P. rhoeas*, *Peronospora argemones* on *P. argemones*, and *Peronospora cristatum* on *P. hybridum*, p. 153.

(445) ______
1940. Nouvelle contribution a l'etude de la mycoflore de Palestine. (Deuxieme partie). [New contributions to the study of the mycoflora of Palestine. (2nd part)] Palestine Jour. Bot., (J. Ser.) 1: 313-335. 450 P17. RAM 22: 39.

Pleospora herbarum on *P. argemone*, p. 329.

(446) Reed, G. M.
1918. Physiological specialization of parasitic fungi. Brooklyn Bot. Garden, Mem. 1: 348-409. 451 B79.

Melampsora magnusiana on *Chelidonium majus*, p. 377.

(447) Rehm, H.
1909. Ascomycetes exs. Fasc. 45. Ann. Mycol. 7: 524-530. 450 An76.

Pleospora calvescens on *P. somniferum*, p. 530.

(448) Reichert, I.
1940. Diseases of industrial and medicinal plants. Internatl. Rev. Agr. 14: 77M-78M. 241 In82.

Alternaria sp., *Fusarium* sp., *Helminthosporium* sp., and *Heterodera marioni* on *P. somniferum*, p. 78M.

(449) Reinmuth, E.
1942. Die parasitäre Blattdürre, eine für den Mohnbau bemerkenswerte Krankheit. [Parasitic leaf desiccation, a noteworthy disease in poppy cultivation.] Angew. Bot. 24: 273-277, illus. 450 An4. RAM 22: 39.

Helminthosporium papaveris and the saprophytes *Cladosporium herbarum*, *Aspergillus* sp., and *Trichothecium roseum*.

(450) ______
1943. Weitere Beobachtungen uber die parasitäre des Ölmohns. [Further observations on parasitic leaf desiccation of the opium poppy.] Angew. Bot. 25: 300-304. 450 An4. RAM 23: 120.

Pleospora calvescens, *Sclerotinia sclerotiorum* and *Botrytis* sp.

(451) ______
1948. Die Helminthosporiose des Ölmohns. [Helminthosporiosis of oil poppy.] Ztschr. f. Pflanzenkrank. u. Pflanzenschutz. 55: 138-141, illus. 464.8 Z3.

Helminthosporium papaveris on *P. somniferum*.

(452) Rieuf, P.
1960. Organismes pathogenes et saprophytiques des plantes au Maroc. [Pathogenic and saprophytic organisms on plants in Morocco.] Morocco Serv. de la Rech. Agron. et de l'Enseign, Cahiers de la Rech. Agron. 9, 359 pp. 14 M82.

Peronospora arborescens on *P. somniferum*, *P. rhoeas*, *P. dubium*, and *P. hybridum*; *Pleospora calvescens* on *P. somniferum*, pp. 118-119; *Alternaria tenuis* on *P.* sp., p. 14; *Entyloma fuscum* on *P.* sp., p. 64.

(453) Riley, E. A.
1960. A revised list of plant diseases in Tanganyika Territory. Commonwealth Mycol. Inst., Mycol. Papers 75. 42 pp., 1 map. 451 Im73M.

Pseudomonas papaveris on *P. rhoeas; Oidium* sp. on *P. rhoeas*, p. 25, *Sclerotinia sclerotiorum* and *Leveillula taurica* on *Eschscholtzia* spp., p. 17.

(454) Rincu, I., and Stanoiu, I.
1971. Contributions to the study of parasitic micromycetes of Romania. Romania Univ. Craiova An. Ser. III-A Biol., Stiint Agr. 2: 99-105, 1970 (1971). S542.R6U5.

Peronospora arborescens on *P. rhoeas*, p. 99.

(455) Romaszewska-Sałata, J.
1973. Materiały do znajomosci grzybow worslikowych (Peronosporales) Lubelszczny. [Materials for knowledge of the Peronosporaceae of the Lublin Region (Poland).] Lublin Univ. Maria Curie - Skłodowska Sect. C, Biol., Ann. 28: 177-189. 512 L96AC.

Peronospora argemones on *P. somniferum*, pp. 181-182.

(456) Roumeguere, C.
1885. Fungi Gallici exsiccati. Cent. XXXV. Rev. Mycol. 7: 215-224. 450 R329.

Oidium erysiphoides f. *papaveris* on *P. humifusum*, p. 223.

(457) ______
1886. Fungi Gallici exsiccati. Cent. XXXVIII. Rev. Mycol. 8: 146-156. 450 R329.

Peronospora effusa var. *papaveris* on *P. rhoeas* in Belgium, p. 153.

(458) ______
1888. Fungi selecti exsiccati. Cent. XLVII. Rev. Mycol. 10: 185-193. 450 R329.

Dendryphium ramosum on *P. rhoeas* in Italy, p. 192.

(459) ______
1889. Fungi selecti exsiccati. Cent. LI. Rev. Mycol. 11: 193-201. 450 R329.

Dendryphium penicillatum on *P.* sp. in France, p. 200.

(460) Rozsypal, J.
1957. Poznamky k virosam maku seteho. [Observations on the viruses of opium poppy.] Ceskoslov. Biol. 6: 438-440. Natl. Sci. Lib., Ottawa. RAM 39: 32.

A virus causing yellowing, sterility, mosaic streaking, etc.

(461) ______ and Mraz, F.
1956. Bacterioses of the opium poppy in Czechoslovakia. Folia Biol. [Prague] 2: 233-238. Biol. Abs. 31, No. 29635. 442.8 F712.

Xanthomonas papavericola and *Erwinia aroidea*.

(462) ______ and Mraz, F.
1956. Bacterial infections of cultivated poppies in Czechoslovakia. Ceskoslov. Biol. 5: 218-226. Natl. Sci. Lib., Ottawa.

Xanthomonas papavericola and *Bacterium carotovorum* on *P.* spp.

(463) Rudolph, B. A.
1931. *Verticillium* hadromycosis. Hilgardia 5: 197-353. 100 C12H.

Verticillium albo-atrum on *P. orientale* and artificial inoculation on *Eschscholtzia californica* and *P. rhoeas*, pp. 330-331.

(464) Russell, G. E.
1965. The host range of some English isolates of beet yellowing viruses. Ann. Appl. Biol. 55: 245-252. 442.8 An72.

P. somniferum susceptible when inoculated, p. 248.

(465) Saccardo, P. A.
1881. Fungi veneti novi vel critici v. Mycologiae Venetae addendi. Ser. XII. [New or critical Venetian fungi or additions to the Venetian mycoflora. Ser. XII.] Michelia 2: 241-301. 450 M58.

Phoma morphea on *P. somniferum*, p. 273.

(466) ______ 1880-1882. Fungi gallici lecti a cl. viris P. Brunaud, abb. Letendre, A. Malbranche, J. Therry, C. C. Gillet, Dom. Libert. vel editi in Mycotheca gallica C. Roumegueri, Ser. II, III, and IV. [French fungi collected by P. Brunaud, Abb. Letendre, A. Malbranche, J. Therry, C. C. Gillet, Dom Libert and edited in Fungi Gallica (Exsiccata) by Roumegueri. Series II, III, and IV.] Michelia 2: 39-135, 302-371, 583-648. 450 M58.

Leptosphaeria pellita on *Papaver* sp., 63, *Peronospora arborescens* on *P. argemone*, p. 586, *Pleospora pellita* on *P. rhoeas*, pp. 321-322, *Phoma striaeformis* var. *hysteriola* on *P. somniferum*, p. 93, and *Septoria chelidoni* on *Chelidonium majus*, p. 345.

(467) ______ 1882. Sylloge Fungorum 1, 768 pp. 462 Sa125.

Sphaerella arthopyrenioideis on *P. burseri*, p. 520, *Sphaerella dendromeconis* on *Dendromecon rigidum*, p. 492, and *Sphaerella morphaea* Sacc. on *P. somniferum*, p. 520.

(468) ______ 1883. Sylloge Fungorum 2, 815 + LXIX + 77 pp. 462 Sa125.

Pyrenophora pellita on *P. rhoeas* and *P. somniferum*, p. 280, *Pleospora papaveracea* on *P.* sp., p. 243, and *Hypocrea spinulosa* on *Chelidonium majus*, pp. 524-525.

(469) ______ 1884. Sylloge Fungorum 3, 860 pp. 462 Sa125.

Phoma striaeformis var. *hysteriola*, pp. 131-132 and *Phoma morphaea*, p. 154 on *P. somniferum*; and *Septoria chelidonii* on *Chelidonium majus*, p. 521.

(470) ______ 1886. Sylloge Fungorum 4, 807 pp. 462 Sa125.

Epicoccum herbarum on *P. somniferum*, p. 739; *Dendryphium penicillatum* on *P. rhoeas* and *Chelidonium majus*, p. 489; *Dendryphium ramosum* on *P. rhoeas*, p. 489; *Torula herbarum* on *P. nudicaule*, p. 256; and *Heterosporium eschscholtziae* on *Eschscholtzia californica*, p. 481.

(471) ______ 1888. Sylloge Fungorum 7, 882 + LIX pp. 462 Sal25.

Caeoma chelidonii on *Chelidonium majus*, pp. 863-864; *Entyloma bicolor* on *P. dubium* and *P. rhoeas*, p. 488; *Entyloma fuscum* on *P. argemone* and *P. rhoeas*, p. 488; and *Peronospora arborescens* on *P. somniferum*, *P. rhoeas*, *P. argemone*, and *P. dubium*, p. 251.

(472) ______ 1889. Sylloge Fungorum 8, 1143 pp. 462 Sal25.

Phialea cyathoidea on (*Chelidonium majus*, "Sacc. Sylloge Fung. 13, 1898"), pp. 251-252; *Phialea eschscholtziae* on *Eschscholtzia californica*, p. 271.

(473) ______ 1891. Sylloge Fungorum 9, 1141 pp. 462 Sal25.

Massaria cleistotheca on *Dendromecon rigidum*, pp. 760-761; *Physalospora polaris* on *P. nudicaule*, p. 593; *Pleospora argyrospora* on *Dendromecon rigidum*, p. 894; and *Pyrenophora chrysospora* var. *polaris* on (*P. nudicaule*, "Sacc. Sylloge Fung. 13, 1898"), p. 896.

(474) ______ 1892. Sylloge Fungorum 10, 964 pp. 462 Sal25.

Alternaria brassicae var. *somniferi* on *P. somniferum*, p. 679; *Alternaria lancipes*, p. 679 and *Gleosporium argemones*, pp. 457-458 on *Argemone platyceras*; and *Ascochyta papaveris* on *P. nudicaule*, pp. 301-302.

(475) ______ 1895. Sylloge Fungorum 11, 753 pp. 462 Sal25.

Dacryomyces papaveris on *P. somniferum*, p. 148 and *Phoma rhoeadis* on *P. rhoeas*, p. 487.

(476) ______ 1899. Sylloge Fungorum 14, 1316 pp. 462 Sal25.

Heterosporium groenlandicum, p. 1088 and *Sphaerella karajacensis*, p. 526 on *P. nudicaule*; *Leptosphaeria chelidonii*, p. 563, *Phoma sphaeronaemoides*, p. 866, *Phyllosticta chelidonii*, p. 845 and *Sphaerella chelidonii*, p. 526 on *Chelidonium majus*; and *Pleosphaerulina californica*, p. 611 on *Dendromecon rigidum*.

(477) ______
1902. Sylloge Fungorum 16, 1291 pp. 462 Sa125.

Septoria rhoeadis on *P. rhoeas*, p. 956 and *Didymaria cheldonii* Jaz. on *Chelidonium uniflorum*, pp. 1039-1040.

(478) ______
1905. Sylloge Fungorum 17, 991 pp. 462 Sa125.

Leptosphaeria papaveris on *P. radicatum*, p. 719.

(479) ______
1906. Sylloge Fungorum 18, 838 pp. 462 Sa125.

Diplodina eschscholtziae on *Eschscholtzia crocea*, pp. 351-352 and *Rhabdospora rhoeadis* on *P. rhoeas*, p. 397.

(480) ______
1912-13. Sylloge Fungorum 22, 1612 pp. 462 Sa125.

Ascochyta chelidonii on *Chelidonium majus*, p. 1014 and *Pocosphaeria dendromeconis* on *Dendromecon* sp., p. 235.

(481) Salata, B., and Salata, J. R.
1970. Materiały do znajomosci grzybow pasozytniczych Lubelszczyzny. Czesc III. Maczniaki rzekome (Peronosporales). [Materials for the study of parasitic fungi of Lublin. Part III. *Peronosporaceae* (Peronosporales)]. Lublin Uniw. Marii Curie-Sklodowska, Ann. Sect. C, 25: 137-147. 512 L96AC.

Peronospora arborescens on *P. somniferum* and *P. rhoeas*, p. 140.

(482) Salmon, E. S.
1908. The Erysiphaceae of Japan. III. Ann. Mycol. 6: 1-16. 450 An76.

Oidium "erysiphoids", pp. 9-10 on *Chelidonium majus*.

(483) Sampson, K.
1940. List of British Ustilaginales. Brit. Mycol. Soc., Trans. 24: 294-311. 451 B76.

Entyloma fuscum on *P. rhoeas* and *P.* sp., p. 301.

(484) Samuel, G.
1931. Summary of plant disease records in South Australia for the two years ending June 30th, 1930. So. Austral. Dept. Agr., Jour. 34: 746. 23 So84.

Yellows disease on *P. nudicaule.*

(485) Sandu-Ville, C.
1946. Contribution a la connaissance des micromycetes de Moldavie. [A contribution to the knowledge of the micromycets of Moldavia.] Jassy Ecole Polytechn., Bul. 1 (2): 384-396. [Library ?]

Septoria chelidonii on *Chelidonium majus,* pp. 392-393.

(486) ______
1971. Ciuperci Pyrenomycetes - Sphaeriales din Romana. [Fungi of the Pyrenomycetes - Sphaeriales of Rumania.] 409 pp. Bucharest Acad. Repub. Socialiste Rumania. [Library ?]

Pleospora papaveracea on *P. somniferum,* p. 338.

(487) Sato, K., Shoji, T., and Ota, N.
1959. Studies on the snow molding of coniferous seedlings. I. Gray mold and sclerotial disease. Tokyo Govt. Forest Expt. Sta. Meguro, Bul. 110:1-153. 99.8 R47.

Botrytis cinerea on *Chelidonium majus* by mechanical transmission, p. 17.

(488) Savile, D. B. O.
1946. *Entyloma fuscum* and related smuts attacking *Papaveraceae.* Canad. Jour. Res. Sect. C, 24: 109-114, illus. 470 C16C.

Entyloma fuscum on *P. somniferum, P. rhoeas,* and *Glaucium flavum* and by mechanical transmission from *P. rhoeas* to *P. atlanticum, P. dubium, P. glaucum, P. monanthum, P. orientale, P. setigerum,* and *P. somniferum,* pp. 109-113; *Entyloma eschscholtziae* on *Dendromecon Eschscholtzia,* p. 113.

(489) Savov, C.
1922. Report of the problems with the disease "Blackening of cereal crops" caused by the fungi *Cladosporium herbarum* Link and *Alternaria brassicae* (Berk.) Sacc. and pure cultures from these two fungi. [Transl. from Bulgar.] Rev. Inst. Rech. Agron. (Bulgaria) 2: 407-419. 106.3 R32.

Cladosporium herbarum on *P. somniferum,* p. 408.

(490) Savulescu, T.
1932. Starea fitosanitaire in România in anul 1930-31. [The phytosanitary situation of Romania in the year 1930-1931.] Romania Inst. Cerc. Agron. Romania [Pub.] 8, 31 pp. 21 R86A.

Peronospora arborescens and *Entyloma fuscum* on *P.* spp., p. 30.

(491) ______
1935. Contributions a la connaissance des Ustilaginees de Roumanie. [Contributions to the knowledge of the Ustilagineae of Romania.] Romania Inst. Cerc. Agron. An. 7(6): 347-430. 21 R86A.

Entyloma fuscum on *P. dubium* and *P. somniferum*, p. 406.

(492) ______
1948. Les especes de *Peronospora* Corda de Roumanie. [The species of *Peronospora* Corda of Romania.] Sydowia 2: 255-307. 450 Sy2.

Peronospora arborescens on *P. dubium*, *P. somniferum*, and *P. rhoeas*, pp. 260 and 269 and *Peronospora glaucii* on *Glaucium corniculatum*, pp. 260 and 283.

(493) ______ Aronescu-Savulescu, A., and others.
1940. Starea fitosanitaire in Romania in anul 1937-1938. [The phytosanitary situation of Romania in the years 1937-1938.] Romania Inst. Cerc. Agron. [Pub.] 62, 98 pp. 21 R86A.

Entyloma fuscum on *P.* sp., p. 83.

(494) ______ and Rayss, T.
1930. Contribution a la connaissance des Peronosporacees de Roumanie. [Contribution to the knowledge of Peronosporaceae of Romania.] Ann. Mycol. 28: 297-320. 450 An76.

Peronospora arborescens on *P. dubium*, p. 309.

(495) ______ and Rayss, T.
1932. Nouvelle contribution a la connaissance des Peronosporacees de Roumanie. [A new contribution to the knowledge of the Peronosporaceae of Romania.] Ann. Mycol. 30: 354-385. 450 An76.

Peronospora arborescens on *P. somniferum*, p. 367.

(496) ______ and Rayss, T.
1935. Quatrieme contribution a la connaissance des Peronosporacees de Roumanie. [Fourth contribution to the knowledge of the Peronosporaceae of Romania.] Ann. Mycol. 33: 1-21. 450 An76.

Peronospora glaucii, org. desc., illus. on *Glaucium corniculatum*, pp. 13-14.

(497) ______ and Sandu-Ville, G.
1930. Contribution a la connaissance des Micromycetes de Roumanie. [Contribution to the knowledge of the micromycetes of Romania.] Soc. Mycol. de France, Bul. 46: 177-192. 451 P213.

Septoria chelidonii on *Chelidonium majus*, p. 185.

(498) Sawada, K.
1917 and 1918. *Helminthosporium papaveri*, K. Sawada sp. nov. Taiwan Jour. of Formosan Nat. Hist. Soc. 31 129. Also in "Diseases of poppy in Formosa," Formosa Agr. Expt. Sta. Bul. 128, pp. 20-22.

Helminthosporium papaveri, orig. descr. on *P. somniferum*. Not seen by compiler. See T. Tanaka 1920.

(499) ______
1922. Descriptive catalog of the Formosan fungi. II. Formosa Dept. Agr. Govt. Res. Inst. Rpt. 2, 173 + 22 pp. 22.5 F764N.

Erysiphe cichoracearum on *P. somniferum*, pp. 56-59.

(500) ______
1928. Descriptive catalog of the Formosan fungi. IV. Formosa Dept. Agr. Govt. Res. Inst. Rpt. 35, 123 + 35 pp. 22.5 F764N.

Erysiphe tabaci Sawada on *P. somniferum*, Syn. *E. lamprocarpa*, *E. communis*, and *E. cichoracearum*.

(501) ______
1933. Descriptive catalog of the Formosan fungi. VI. Formosa Dept. Agr. Govt. Res. Inst. Rpt. 61, 117 pp., illus. 22.5 F764N.

Original description of *Oidiopsis papaveris* on *P. somniferum*, p. 39.

(502) ______
1951. Researches on fungi in the Tohoku District of Japan. (I). Erysiphaceae. Tokyo Govt. Forest Expt. Sta. Meguro, Bul. 50: 97-140. 99.8 R47.

Oidium "erysiphoides" on *Chelidonium majus* var. *grandiflorum*, p. 127.

(503) ______
1958. Researches on fungi in the Tohoku District of Japan. (IV.) Fungi Imperfecti. Tokyo Govt. Forest Expt. Sta. Meguro, Bul. 105: 35-140. 99.8 R47.

Alternaria somniferi on *P. somniferum*, p. 104 and *Septoria chelidonii* on *Chelidonium majus* var. *grandiflorum*, pp. 56-57.

(504) ______
1959. Descriptive catalog of Taiwan fungi. XI. Taiwan Natl. Univ. Col. Agr., Spec. Pub. 8, 268 pp. 22.5 T136.

Alternaria brunnea (orig. descr.), p. 206, *A. papaveris-somniferi* (orig. descr.), p. 208, *Cercospora papavericola*, p. 223, and *Dendryphium papaveris* (new comb.), p. 200, on *P. somniferum*.

(505) Scharif, G.
1970. Downy mildew of opium poppy in Iran. *Peronospora arborescens* (Berk.) de Bary. Iran Jour. Plant Path. 6(1): 1-8. SB731.A1I7. RAM 50 #1323.

(506) Schmelzer, K.
1959. Zur Kenntnis der Wirtspflanzenkreises des Rubenmosaik - Virus. [Knowledge of the host plants of beet mosaic virus.] Zentbl. f. Bakt. [Etc.] Abt. II, 112: 12-33. 448.3 C33.

On *Argemone intermedia, Argemone mexicana, Argemone platyceras*, and *Papaver rhoeas*. (*P. somniferum* was listed as a host in the 1958 paper but not in this one.)

(507) ______ and Rondomanski, W.
1958. Zur Atiologe des Mohnmosaiks. [On the etiology of poppy mosaic.] Phytopath. Ztschr. 33: 426-429, illus. 464.8 P562. RAM 38: 136.

(508) Schmidt, T.
1950. Das Auftreten wichtiger Krankheiten und Schadlinge an Kulturpflanzen in Osterreich im Jahre 1949. [The occurrence of important diseases and pests of cultivated plants in Austria in 1949.] Pflanzenschutz. Ber. 4: 84-94. 464.9 P48.

Peronospora arborescens on *P. somniferum*, p. 89.

(509) Schmiedeknecht, M.
1958. Morphologische Untersuchungen zur Frage der Rassenbildung bei *Helminthosporium papaveris* Saw. [Morphological studies on the question of strain formation in *Helminthosporium papaveris*.] Arch. f. Mikrobiol. 28: 404-416, illus. RAM 38: 246. 442.8 Ar26.

(510) Schneider, R.
1953. Untersuchungen über Feuchtigkeitsansprüche parasitischer Pilze. [Studies on the humidity requirements of parasitic fungi.] Phytopath. Ztschr. 21: 63-78, illus. 464.8 P562.

Helminthosporium papaveris (*Pleospora calvescens*) and *Verticillium albo-atrum*, p. 65.

(511) Schuepp, H., and Blumer, S.
1963. Über einige Mehltaupilze auf Zierpflanzen. [On some mildews on ornamentals.] Phytopath. Ztschr. 48: 329-336. RAM 43: 1341. 464.8 P562.

Erysiphe communis on *P. somniferum*, pp. 330 and 332.

(512) Seda, A.
1935. Boj proti chorobam skuducum domacich olejnych rostlin. [Combat against pests and diseases of domestic oil plants.] Casove Otazky Zemedel. 45: 87-108, illus. 19.5 C27.

Peronospora arborescens, *Alternaria brassicae*, *Helminthosporium papaveris*, and *Heterodera schachtii* on *P. somniferum*, pp. 93-95 and 103-104.

(513) Sekhawat, P. S., and Kothari, K. L.
1971. Amino acid composition of healthy and downy mildewed plants of opium poppy (*Papaver somniferum*). Indian Phytopath. 24: 403-405. 464.8 In2.

(514) Serzane, M. J.
1962. Augu slimibas. Praktiskie Darbi. [Plant diseases. Practical studies.] 518 pp. Riga, Latvia. 464 Se62.

Alternaria brassicae var. *somniferi*, *Bacterium papaverum*, *Peronospora arborescens*, and *Helminthosporium papaveris* in Latvia on *P.* spp., pp. 43, 78, 238, and 239; and *Diplodina chelidonii* and *Septoria chelidonii* on *Chelidonium majus*, p. 204 and *Melampsora larici-populina* on *Chelidonium* sp., p. 166.

(515) Severin, H. H. P., and Freitag, J. H.
1934. Ornamental flowering plants naturally infected with curly-top and aster-yellows viruses. Hilgardia 8: 233-260. 100 C12H.

Aster-yellows virus on *Eschscholtzia californica*, p. 254.

(516) Severin, V., and Docea, E.
1966. Pătarea bacteriană ă frunzelor de Mac. [Bacterial spotting of poppy leaves.] Prob. Agr. [Bucharest] 18 (12): 55-56. 21 R862.

Xanthomonas papavericola on *P. somniferum*, *P. rhoeas*, *P. orientale*, *Meconopsis baileyi*, and *Argemone*; Colombia, Canada, USSR, England, Bulgaria, probably France and India.

(517) Shaw, C. G.
[1972] Host fungus index for the Pacific Northwest - 1. Hosts. Wash. Agr. Expt. Sta., Bul. 765, 121 pp. 100 W27E.

Erysiphe polygoni, *Sclerotinia sclerotiorum*, and *Thanatephorus cucumeris* on *P. somniferum*, p. 66.

(518) Shaw, F. J. F., and Ajrekar, S. L.
1915. The genus *Rhizoctonia* in India. India Dept. Agr. Bot. Ser., Mem. 8: 177-196. 451 In2.

Rhizoctonia napi on *Argemone mexicana*, p. 178.

(519) Shekhawat, G. S.
1965. Present standard of poppy (*Papaver somniferum*) cultivation in Kota Region of Rajasthan. Indian Jour. Agron. 10: 430-434. 22 In235.

Erysiphe sp. on *P. somniferum*.

(520) Siemaszko, W.
1923. Badania mykologiczne w gorach Kaukazu. [Mycological studies in the Caucasian Mountains.] Warsaw Tow. Nauk., Archiv. Nauk Biol. 1 (14): 1-57. 464.9 W262.

Melampsora magnusiana, p. 22 and *Septoria chelidonii*, p. 37 on *Chelidonium majus*.

(521) Simonian, S. A.
1958. New forms of parasitic fungi. [Transl. from Russ.] Akad. Nauk. Armianskoi SSR, Izv. Biol. i Sel'skokhoz. Nauk. 11 (6): 87-91. 20 Er4.

Orig. descr. of *Sphaerotheca macularis* Magn. f. *papaveris* on *P. orientale*, p. 87.

(522) ______
1959. New material for the mycoflora of Armenia. [Transl. from Russ.] Akad. Nauk. Armianskoi SSR, Izv. Biol. Nauk. 12 (10): 23-31. 20 Er4.

Pleospora papaveracea on *P. orientale*, p. 24.

(523) Singh, R. N.
1969. A new bacterial disease of poppies in India and efficacy of antibiotics against its causal organism. Plant Sci. [Lucknow] 1: 151-153. 107.5 P58.

Pseudomonas papaveris on *P. rhoeas* and *P. orientale*. (He refers to an article by Lelliott and Wallace [1955] which discusses a similar disease in Tanganyika.)

(524) Skoric, V.
1930. Diseases of economic plants in the University Farm Maksimir, Yugoslavia. Gospodarsko-Sumarski Fakult. Svencilista Kraljevine Jugoslavije u Zagrebu Spomenica 1919/1929: 738-746. 33.38 Z1.

Peronospora arborescens on *P. rhoeas* but not on *P. somniferum* in immediate vicinity of the heavily attacked *P. rhoeas*, p. 740.

(525) Smarods, J.
1953. Materiali par Latvijs PSR Peronosporalu senem. [Data on Peronosporaceous fungi of the Latvian SSR.] Riga [Latvia] Zinatnu Akad. Vestis 1953 (7): 39-46. 511 R442.

Peronospora arborescens on *P. rhoeas*, *P. somniferum*, and *P. dubium*; *Peronospora argemones* on *P. argemone*, p. 43.

(526) ______
1955. Parskats par Latvijas PSR nepilnigi pazistamajam senem. II. Melankonialiun. III. Hiiomicetali. (3. zinojums) [A survey of imperfect fungi of Latvia SSR. II. Melanconiales. III. Hyphomycetales. (Report III).] Riga [Latvia] Zinatnu Akad. Vestis 8 (97): 93-105. 511 R442.

Alternaria brassicae var. *somniferum* on *P. somniferum*, p. 97.

(527) Smith, K. M.
1936. The virus diseases of glasshouse and garden plants. Sci. Hort. 4: 126-140. 84 H78.

Tomato spotted wilt virus on *P. nudicaule*, p. 130.

(528) Smith, W. K.
1958. A survey of the production of pectic enzymes by plant pathogenic and other bacteria. Jour. Gen. Microbiol. 18: 33-41. 448.3 J823.

Xanthomonas papavericola and *Erwinia aroideae*.

(529) ______
1958. Chromatographic examination of the products of digestion of pectic materials by culture solutions of plant pathogenic and other bacteria. Jour. Gen. Microbiol. 18: 42-47. 448.3 J823.

Xanthomonas papavericola and *Erwinia aroideae*, p. 44.

(530) Spegazzini, C.
1899. Fungi Argentini novi vel critici. [Argentine fungi new or critical.] Buenos Aires Mus. Nac. Anal. 4: 81-365. 516 B86A.

Oidium erysiphoides on *P. somniferum*, p. 330.

(531) Standen, J. H.
1952. Host index of plant pathogens of Venezuela. U.S. Agr. Res. Serv. Plant Dis. Rptr. Sup. 212: 59-106. 1.9 P69P.

Cercospora sp. on *P.* sp., p. 89, *Cladosporium guanicensis* on *Argemone mexicana*, p. 62, and *Ovularia* sp. on *Argemone platyceras*, p. 63.

(532) Staneviciene, S.
1970. Germination of conidia of some species of Peronosporaceous fungi. Acad. Nauk. Litovskoi SSR, Darbai Trudy Ser. C, 1 (51): 25-28. 511 Ak192D.

Peronospora arborescens.

(533) Stapel, C.
1943. Industriplanter. [Industrial plants.] Denmark. Statens Plantepatolog. Forøg, Overs. over Plantesygdomme 263: no p. nos. 464.9 Sa4M.

Peronospora arborescens and *Helminthosporium papaveris* on *P. somniferum.*

(534) ______
1960. Sygdomme og skadedyr i Valmueafgrøder. [Diseases and pests in poppy crops.] Landbonyt 14: 276-278, illus. RAM 40: 374. 11 L2322.

Peronospora arborescens and *Helminthosporium papaveris* (*Pleospora calvescens*) on *P. somniferum.*

(535) Stapp, C.
1935. Contemporary understanding of bacterial plant diseases and their causal organisms. Bot. Rev. 1: 405-425. 450 B6527.

Bacillus papaveris on *P. somniferum* and *P.* spp.; *Bacterium papavericola* on *P. orientale* and *P. rhoeas,* p. 407.

(536) Starr, M. P.
1946. The nutrition of phytopathogenic bacteria. I. Minimal nutritive requirements of the genus *Xanthomonas.* Jour. Bact. 51: 131-143. 448.3 J82.

Xanthomonas papavericola, p. 136.

(537) Stevenson, J. A.
1918. A check list of Porto Rican fungi and a host index. Puerto Rico Dept. Agr., Jour. 2: 125-264. 8P832J.

Cladosporium guanicensis, p. 215 and *Septoria chelidonii,* p. 202 on *Argemone mexicana.*

(538) ______
1942. *Cercospora* on poppy in Alabama. U.S. Agr. Res. Serv. Plant Dis. Rptr. 26: 280. 1.9 P69P.

Cercospora papaveri on *P.* sp.

(539) ______
1975. Fungi of Puerto Rico and the American Virgin Islands. 743 pp. Contrib. Reed Herbarium XXIII. Baltimore, Md. [Library ?]

Cladosporium guanicensis, p. 482 and *Septoria chelidonii*, p. 401 on *Argemone mexicana.*

(540) Stojanovic, D., Panjanin, M., and others.
1951. Bolesti i Stetocine Kulturnih Biljaka. [Diseases and pests of cultivated plants.] 213 pp. Belgrade. 464.4 St6.

Peronospora arborescens on *P.* spp., pp. 48-49.

(541) Swingle, W. T.
1888. Notes on fungi from western Kansas, U.S.A. Jour. Mycol. 4: 27-29. 450 M99.

Gloeosporium argemonis on *Argemone platycerus*, p. 28.

(542) Sydow, H., and Sydow, P.
1903. Ein Beitrag zur Pilzflora Portugals. [A contribution to the fungus flora of Portugal.] Broteria 2: 149-155. 410 B79C.

Septoria chelidonii on *Chelidonium majus*, p. 154.

(543) ______ Sydow, P., and Butler, E. J.
1907. Fungi Indiae orientalis. [Fungi of East India.] Ann. Mycol. 5: 485-515. 450 An76.

Peronospora arborescens on *P. somniferum* and *Argemone mexicana*, p. 512.

(544) ______ and Sydow, P.
1909. Micromycetes japonici. [Micromycetes of Japan.] Ann. Mycol. 7: 168-175. 450 An76.

Septoria chelidonii on *Chelidonium majus*, p. 170.

(545) ______ and Sydow, P.
1913. Ein Beitrag zur Kenntnis der parasitischen Pilzflora des nördlichen Japans. [A contribution to the knowledge of the parasitic fungi of northern Japan.] Ann. Mycol. 11: 93-118. 450 An76.

Peronospora chelidonii and *Septoria chelidonii* on *Chelidonium majus*, pp. 112 and 115.

(546) ______ and Sydow, P.
1914. Zweiter Beitrag zur Kenntnis der parasitschen Pilzflora des nördlichen Japans. [Second contribution to the knowledge of the parasitic fungi of northern Japan.] Ann. Mycol. 12: 158-165. 450 An76.

Peronospora arborescens on *P.* spp., p. 160.

(547) Sydow, P. and Sydow, H.
1915. Monographia Uredinearum. Pucciniaceae (excl. *Puccinia* et *Uromyces*) - Melampsoraceae - Zaghouaniaceae - Coleosporiaceae. V. 3. 726 pp. Lipzig. 462 Sy2.

Melampsora magnusiana on *Chelidonium majus*, pp. 341-343.

(548) Tai, F. L.
1936. A list of fungi hitherto known from China. [Peiping] Natl. Tsing Hua Univ., Sci. Rpt. Ser. B, 2: 137-165. 513 P35.

Peronospora arborescens on *P. alpinum* and *P. somniferum* in Manchuria, p. 155.

(549) Takimoto, S.
1935. A soft rot of opium poppy. Kyushu Imp. Univ. Fakult. Terkult., Bul. Sci. 6: 306-311, illus. 107.6 K995B.

Orig. descr. of *Bacterium papaveris* on *P. somniferum;* exptl. infec. on *P. orientale* and *P. rhoeas,* p. 310.

(550) Tanaka, T.
1920. New Japanese fungi. Notes and translations - IX. Mycologia 12: 329-333. 450 M99. *Helminthosporium papaveri* K. Sawada sp. nov. *In* Taiwan Jour. of Formosan Natl. Hist. Soc. 31: 129 and in Bul. 128, Agr. Expt. Sta. Govt. Formosa, "Diseases of poppy in Formosa" by K. Sawada, pp. 20-22, T 7, 6 June, 1918.

On *P. somniferum.*

(551) Tarr, S. A. J.
1955. The fungi and plant diseases of the Sudan. 127 pp. Kew, England. 462.19 T17.

Erysiphe cichoracearum DC on *P.* sp., p. 23.

(552) ______
1963. A supplementary list of Sudan fungi and plant diseases. Commonwealth Mycol. Inst., Mycol. Papers 85. 31 pp. 451 Im73M.

Alternaria tenuissima on insect honeydew with *Cladosporium* sp., p. 19, *Cladosporium cladosporioides* on leaf spots with insects, p. 14, and *Leveillula taurica,* p. 17, all on *Argemone mexicana.*

(553) Tassi, F.
1900. Micologia della Provincia Senese. [Mycology of the province of Senese.] Siena Univ. Lab. ed Orto Bot., Bul. 3: 58-65. 451 Si1.

Peronospora arborescens on *P. rhoeas* in Italy, p. 60.

(554) ______
1900. Novae Micromycetum species descriptae et iconibus illustratae. [New micromycetes described and illustrated.] Siena Univ. Lab. ed Orto Bot., Bul. 3: 52-57. 451 Si1.

Orig. descr. of *Septoria rhoeadis* on *Papaver rhoeas,* p. 56.

(555) ______
1902. I generi *Phyllosticta* Pers., *Phoma* Fr., *Macrophoma* (Sacc.) Berl. et Vogel e i loro generi analoghi, giusta la legge d'analogia. [The genera *Phyllostica* Pers., *Phoma* Fr., *Macrophoma* (Sacc.) Berl. and Vogl. and similar genera according to the law of analogy.] Siena Univ. Lab. ed Orto Bot., Bul. 5: 3-72. 451 Si1.

Diplodinula glaucii, new gen. and new comb., syn. *Diplodina glaucii* on *Glaucium flavum,* p. 46.

(556) ______
1904. Micologia della Provincia Senese. [Mycology of the province of Senese.] Siena Univ. Lab. ed Orto Bot., Bul. 6: 128-138. 451 Si1.

Rhabdospora rhoeadis on *P. rhoeas,* p. 134.

(557) ______
1904. Nuovi Micromiceti. [New micromycetes.] Siena Univ. Lab. ed Orto Bot., Bul. 6: 126-127. 451 Sil.

Rhabdospora rhoeadis, orig. descr., on *P. rhoeas*, p. 127.

(558) Tasugi, H., and Siino, H.
1940. Damping-off of seedlings of China aster and zinnia. Phytopath. Soc. Japan, Ann. 10: 278-293, illus. 464.9 P562.

Orig. descr. of *Pythium megalacanthum* var. *callistephi*, artif. infec. on *Papaver rhoeas*, p. 293.

(559) Taubeneck, U.
1954. Versuche mit Mikroorganismen welche gegen *Helminthosporium papaveris* antibiotisch wirken. [Research with microorganisms antibiotic to *Helminthosporium papaveris*.] Nachrichtenbl. f. den Deut. Pflanzenschutz. [Berlin] N.S., 8: 56-57. 464.9 N11.

(560) Tharp, B. C.
1917. Texas parasitic fungi. Mycologia 9: 105-124. 450 M99.

Septoria argemones, orig. descr., on *Argemone platyceras*, p. 122.

(561) Thind, K. S.
1942. The genus *Peronospora* in the Punjab. Indian Bot. Soc. Jour. 21: 197-215, illus. 450 J821.

Peronospora arborescens on *P. rhoeas*, p. 207.

(562) Tilford, P. E.
1932. Diseases of ornamental plants. Ohio Agr. Expt. Sta. Bul. 511, 82 pp. 100 Oh3S.

Bacterium papavericola on *P.* spp., p. 59.

(563) Tobisch, J.
1931. Beiträge zur Kenntnis der Pilzflora von Kärnten. III. [Contribution to the knowledge of the fungus flora of Kärnten. III.] Oesterr. Bot. Ztschr. 80: 108-135. 450 Os7.

Peronospora arborescens on *P. nudicaule*, p. 124.

(564) ______
1938. Beiträge zur kenntnis der pilzflora von Kärnten. V. [Contribution to the knowledge of the fungus flora of Carinthia, Austria. V.] Oesterr. Bot. Ztschr. 87: 273-315. 450 Os7.

Septoria chelidonii, p. 309. No host given.

(565) Tochinai, Y., and Hara, I.
1944. A list of parasitic fungi collected in the territory of Mo-Kyo, the inner Mongolia, in the summer of 1942. Soc. Agr. and Forestry Sapporo [Japan], Jour. 36 (3): 91-97. 22.5 So1.

Peronospora arborescens on *P. somniferum*, p. 91.

(566) Togashi, K., and Onuma, F.
1934. A list of parasitic fungi collected on Mt. Hayachine, Iwate Prefectur. Morioka, Japan, Imp. Col. Agr. and Forestry, Bul. 17, 74 pp. 107.6 M82.

Peronospora chelidonii on *Chelidonium majus*, p. 4.

(567) Tolf, R.
1891. Mykologiska notiser fran Smaland. [Mycological notes from Smaland. I.] Bot. Not. 1891: 211-221. 450 B656.

Peronospora arborescens on *P. somniferum*, p. 219.

(568) Tompkins, C. M., Ark, P. A., Tucker, C. M., and Middleton, J. T.
1939. Soft rot of pumpkin and watermelon fruits caused by *Pythium ultimum*. U.S. Dept. Agr., Jour. Agr. Res. 58: 461-475. 1 Ag84J.

Pythium ultimum on *P. nudicaule*, So. Africa, pp. 462, 468, and 469.

(569) Toro, R. A.
1931. The Cercosporae of Puerto Rico. Puerto Rico Dept. Agr., Jour. 15: 5-17. 8 P832J.

Cercospora whetzelii, orig. descr., on *Argemone mexicana*, p. 16.

(570) Traverso, G. B.
1903. Primo elenco di Micromiceti de Valtellina. [First catalogue of the Micromycetes of Valtellina (Italy).] Ann. Mycol. 1: 297-323. 450 An76.

Septoria chelidonii on *Chelidonium majus*, p. 313.

(571) Trusova, N. P.
1913. Fungus diseases of cultivated and wild plants observed during the summer of 1912 in the Tula government. [Transl. from Russ.] Zhur. Bolezni Rast. 7: 205-217. 464.8 Z6.

Septoria chelidonii on *Chelidonium majus*, p. 216.

(572) Tucker, C. M.
1933. Distribution of the genus *Phytophthora*. Mo. Agr. Expt. Sta. Res. Bul. 184, 80 pp. 100 M693.

Phytophthora sp. and *P. cryptogea* on *P. nudicaule* in Australia and *Phytophthora cactorum* on *Eschscholtzia californica* in Holland, p. 33.

(573) Tulasne, M.
1854. Note sur les Champignons entophytes, tels que celui de la Pomme-de-terre. [Note on the endophytic fungi, like the ones on potato.] Acad. Sci. Compt. Rend. Paris 38: 1101-1104. 505 P21.

Peronospora papaveris, host not given, pp. 1103 and 1104.

(574) Ubrizsy, G., and Voros, J.
1966. Phytopathogenic and saprophytic fungi from Hungary. I. Contributions to the Peronosporales, Erysiphales, and Deuteromycetes flora of Hungary. Acta Phytopath. Acad. Sci. Hungaricae 1 (1): 145-163. SB731.A3.

Erysiphe communis, Peronospora arborescens on *P. somniferum*, pp. 151 and 148.

(575) Unamuno, P. L. M.
1928. Datos para el estudio de la flora micologica de los alrededores de Santa Maria de la Vid (Burgos). [Data for the study of the mycological flora of the vicinity of Santa Maria de la Vid (Burgos).] Soc. Espan. de Hist. Nat., Bol. 28: 195-202. 506 M263B.

Entyloma fuscum on *P. rhoeas*, p. 199.

(576) ______
1928. Datos para el estudio de la flora micologica de los alrededores de Ucles (Cuenca). [Data for the study of the mycological flora of the vicinity of Ulces (Cuenca).] Soc. Espan. de Hist. Nat., Bol. 28: 495-506. 506 M263B.

Septoria chelidonii on *Chelidonium majus*, p. 502.

(577) ______
1930. Hongos microscopicos de los alrededores de Caudete (Albacete). [Microscopic fungi in the vicinity of Caudete (Albacete).] Soc. Espan. de Hist. Nat., Bol. 30 (7): 376-390. 506 M263B.

Entyloma fuscum on *P. rhoeas*, p. 382.

(578) ______
1931. Contribucion al estudio de los hongos microscopicos de la provincia de Salamanca. [Contribution to the study of the microscopic fungi of the province of Salamanca, Spain.] Soc. Espan. de Hist. Nat., Bol. 31: 85-96. 506 M263B.

Septoria chelidonii on *Cheldonium majus*, p. 92.

(579) Unger, D. F.
1847. Botanische Beobachtungen. IV. [Botanical observations. IV.] Bot. Ztg. 5: 306-318. 450 B655.

Orig. descr. of *Peronospora grisea* now considered a syn. of *P. arborescens*, p. 315.

(580) United States Department of Agriculture. Crops Research Division.
1960. Index of plant diseases in the United States. Agr. Handb. 165, 531 pp. 1 Ag84Ah.

Aecidium plenum, Alternaria lancipes, Cercospora whetzelii, Cladosporium guanicensis, Peronospora arborescens, Phymatotrichum omnivorum, Septoria argemones and *S. chelidonii* on *Argemone mexicana; Entyloma eschscholtziae, Pleosphaerulina californica* and *Pocosphaeria dendromeconis* on *Dendromecon rigida; Alternaria* sp., *Botrytis cinerea, Erysiphe polygoni, Meloidogyne* sp., *Heterosporium eschscholtziae, Verticillium albo-atrum, Xanthomonas papavericola* and *Callistephus* virus 1 and 1A on *Eschscholtzia californica; Botrytis cinerea, Entyloma fuscum, Pleospora media, Rhizoctonia solani,* beet curly top virus and tomato spotted wilt virus on *P. nudicaule; Aphelenchoides fragariae, Botrytis cinerea, Rhizoctonia solani, Verticillium albo-atrum, Xanthomonas papavericola* and beet curly top virus on *P. orientale; Botrytis cinerea, Rhizoctonia solani* and *Xanthomonas papavericola* on

P. rhoeas; Erysiphe polygoni, Meloidogyne sp., *Rhizoctonia solani,* and *Xanthomonas papavericola* on *P. somniferum; Entyloma fuscum, Septoria* sp., and *Xanthomonas papavericola* on *P.* spp.*; Phymatotrichum omnivorum* and *Septoria chelidonii* on *Chelidonium majus,* pp. 328-329.

(581) Uppal, B. N., Patel, M. K., and Kamat, M. N.
1935. The fungi of Bombay. Bombay Dept. Agr., Bul. 176, 56 pp. 1934 (1935). 22 B63B.

Corticium solani (*Rhizoctonia solani* Kuehn) on *P. somniferum* in Karachi, p. 19.

(582) Urries y Azara, M. J. de.
1944. Hongos microscopicos del Valle de Benasque (Pirineos aragoneses). [Microscopic fungi of the Benasque Valley (Aragonese Pyrenees), Spain.] Madrid Jard. Bot., An. 4: 167-193. 451 M262.

Septoria chelidonii on *Chelidonium majus,* p. 193.

(583) Vanderyst, H.
1906. Nouvelles stations de Peronosporees en 1905. [New locations of Peronosporacea in 1905.] Belg. Soc. Roy. de Bot., Bul. 43: 225-229. 451 B41B.

Peronospora arborescens on *P.* spp.

(584) Vestergren, T.
1903. Zur Pilzflora der Insel Oesel. [On the fungus flora of Oesel Island.] Hedwigia 42: 76-117. 450 H35.

Peronospora arborescens on *P. argemone* and *P. dubium,* p. 99; *Septoria chelidonii* on *Chelidonium majus,* p. 110.

(585) Viennot-Bourgin, G.
1931. Recoltes pathologiques des mois de juillet, aout, septembre 1931 sur le Domaine de l'Ecole de Grignon (Seine-et-Oise) ou aux environs. [Pathological collections made during the months of July, August and September 1931 on the property of the Grignon School (Seine-et-Oise) and its environs.] Rev. de Path. Veg. et Entom. Agr. de France 18: 299-302. 464.9 Sol.

Septoria chelidonii on *Chelidonium majus,* p. 302.

(586) ______
1933. Notes sur quelques Uredinales et Ustilaginales observees en 1931-1932 dans le departement de Seine-et-Oise (region Sud). [Notes on some Uredinales and Ustilaginales observed in 1931-1932 in the department of Seine-et-Oise (south region).] Rev. Path. Veg. and Entom. Agr. de France 20: 85-114. 464.9 Sol.

Entyloma fuscum on *P. dubium* and *P. rhoeas*, p. 110.

(587) Voronikhin, N. N.
1916. Materials on the mycological flora of the Caucasus. III. Fungi in the herbarium of the Caucasian Museum. [Transl. from Russ.] Tiflis. Kavkazskago Muz. Izv. 10: 1-35. 511 T44.

Pleospora herbarum on *P. monanthum*, p. 9.

(588) ______
1927. Contributions to the mycological flora of the Caucasus. [Transl. from Russ.] Leningrad Bot. Muz. Akad. Nauk SSR, Trudy 21: 87-254. 451 Sa25.

Peronospora arborescens on *Papaver* sp., p. 97, and *Septoria chelidonii* on *Chelidonium majus*, p. 181.

(589) Voss, W.
1887. Materialien zur Pilzkunde Krains. V. [Data on the mycology of Krains. V.] Vienna Zool.-Bot. Gesell., Verhandl. 37: 207-252. 410.9 V67.

Entyloma fuscum on *P. somniferum*, p. 210.

(590) Wager, V. A.
1941. Descriptions of the South African Pythiaceae with records of their occurrence. Bothalia 4: 3-35. 460.46 B65.

Pythium ultimum on *P. nudicaule*, p. 5, and *Pythium oligandnum* on *P. rhoeas*, p. 16.

(591) Walker, J., and McLeod, R. W.
1972. New records of plant diseases in New South Wales, 1970-1971. Agr. Gaz. N.S. Wales 83: 176-179. 23 N472.

Pleospora papaveracea on *P. nudicaule*, p. 178.

(592) Wallace, G. B.
1952. 1950 Annual report of the plant pathologist, Lyamungu, Moshi. Tanganyika Dept. Agr. Ann. Rpt. 1950: 167-172. 24 T15.

Pseudomonas sp. on *P. rhoeas*, p. 171.

(593) ______ and Wallace, M. M.
1953. A supplement to a list of plant diseases of economic importance in Tanganyika Territory. Commonwealth Mycol. Inst. Papers No. 51, 7 pp. 451 Im73M.

Pseudomonas sp. on *P. rhoeas*, p. 5.

(594) Wallace, M. M.
1944. *Sclerotinia* disease of beans and other crops. E. Afr. Agr. Jour. 9: 171-172. 24 Ea74.

Sclerotinia sclerotiorum on *Eschscholtzia* sp.

(595) Waterhouse, G. M., and Blackwell, E. M.
1954. Key to species of *Phytophthora* recorded in the British Isles. Commonwealth Mycol. Inst., Mycol. Papers 57, 9 pp. 451 Im73M.

Phytophthora verrucosa on *Meconopsis* spp., p. 6.

(596) Waterston, J. M.
1939. Annotated list of diseases of cultivated plants in Bermuda. 38 pp. Bermuda Dept. Agr. 464 W31.

Entyloma fuscum on *P. rhoeas* and *P. somniferum*, p. 13; and *Sclerotinia sclerotiorum* on *Argemone mexicana*, p. 21.

(597) ______
1947. The fungi of Bermuda. Bermuda Dept. Agr. Bul. 23, 305 pp. 8 B45A.

Entyloma fuscum on *P. somniferum* and *P. rhoeas*, p. 177; and *Cladosporium guanicensis*, p. 239, *Myrothecium* sp., p. 245, *Sclerotinia sclerotiorum*, p. 133, and, *Septoria chelidonii*, p. 218, on *Argemone mexicana*.

(598) Weese, J.
1925. Eumycetes selecti exsiccati. [Selected Eumycetes exsiccati.] Vienna Bot. Inst. der Tech. Hochsch. Mitt. 2: 17-26. 451 V67.

Pleospora calvescens on *P. somniferum*, p. 20.

(599) Weille, F. A. de.
1961. L'influence de la radiation ultra-violette proche sur le pouvoir germinatif de conidies de *Peronospora arborescens*. [The influence of near ultra-violet radiation on the germinative ability of conidia of *Peronospora arborescens*.] Tijdschr. over Plantez. 67: 417-432. 464.8 T44. RAM 41: 401.

(600) Whetzel, H. H.
1923. Report of the plant pathologist. Bermuda Dept. Agr. Rpt. 1922: 28-32. 8 B45.

Entyloma fuscum on *P. rhoeas*, p. 29.

(601) White, R. P.
1931. Diseases of ornamental plants. N.J. Agr. Expt. Sta. Cir. 226, 98 pp. 100 N46S.

Bacterium papavericola on *P. orientale* and *P. rhoeas*, p. 62.

(602) Wiehe, P. O.
1953. The plant diseases of Nyasaland. Commonwealth Mycol. Inst. Papers 53, 39 pp. 451 Im73M.

Erysiphe polygoni DC on *P. rhoeas*, p. 24, and *Phytophthora parasitica* on *Eschscholtzia californica*, p. 16.

(603) Wilson, G. W.
1908. Studies in North American Peronosporales. III. New or noteworthy species. Torrey Bot. Club Bul. 35: 361-365. 451 T63B.

Peronospora corydalis (actually *Peronospora arborescens*) on *Argemone platyceras*.

(604) Winter, G.
1887. Ascomyceten [Ascomycetes.] Rabenhorst's Kryptogamen Flora. Band 1, Abt. 2, Aufl. 2, 928 pp. 461 R11.

Pleospora papaveracea on *P. somniferum*, p. 501.

(605) Wollenweber, H. W.
1929. Die Wirtelpilz-Welkekrankheit (Verticilliose) von Ullme, Ahorn und Linde usw. [Verticillosis of elm, maple and linden, etc.] Berlin-Dahlem Biol. Reichsanst. f. Land u. Forstw. Arb. 17: 273-299. 410.9 G31.

Verticillium albo-atrum on *P. braceteatum*, p. 291.

(606) Yamamoto, W., and Maeda, M.
1960. *Cercospora* species in Japan. Hyogo Univ. Agr. Sci. Rpts. Ser. Agr. Biol. 4: 41-91. 442.9 H99.

Cercospora papaveri on *P. somniferum*, p. 67.

(607) Yarwood, C. E.
1937. Unreported powdery mildews. U.S. Dept. Agr. Crops Res. Div. Plant Dis. Rptr. 21: 180-182. 1.9 P69P.

Erysiphe polygoni on *Eschscholtzia californica*, p. 180.

(608) Yossifovitch (see Josifovic)

(609) Zaman, M. B., and Khan, A. S.
1969. Studies on some diseases of *Papaver somniferum* Linn. Pakistan Jour. Forest. 19: 185-193. 99.8 P17.

Erysiphe polygoni, *Cercospora papaveri*, *Rhizoctonia solani*, *Peronospora arborescens*, *Dactylium roseum*, *Trichoderma viride*, *Sporotrichum* sp., *Cladosporium herbarum* and *Rhizomorpha* sp.

(610) Zambettakis, C.
1952. Recherches sur l'helminthosporiose de l'oeillette et son traitement. [Researches on helminthosporiosis of the poppy and its treatment.] France Inst. Natl. de la Rech. Agron. Ser. C, Ann. des Epiphyt. 3: 11-59. 464.9 F48 An. RAM 32: 99-100.

Pleospora calvescens [*Helminthosporium papaveris*]

(611) Zaprometov, N. G.
1925. Diseases of cultivated plants in Middle Asia. [Transl. from Russ.] 165 pp. Tashkent, Uzbek SSR. 464 Z12. RAM 5: 174-175.

Peronospora arborescens (Uzbek SSR) and *Erysiphe cichoracearum* (Turkistan) on *P. somniferum*, p. 15.

(612) Zarzycka, H.
1958. Mikoflora nasion maku. [The fungous flora of opium poppy seeds.] Rocz. Nauk, Rolnicz. Ser. A, — Roslinna 78: 309-342, illus. 20.5 R59 Ser. A.

Alternaria spp., *Aspergillus* spp., *Bacteria*, *Cladosporium herbarum*, *Fusarium concolor*, *F. scripi* var. *caudatum*, *Gloeosporium* sp., *Helminthosporium papaveris*, *Penicillium* spp., *Pullularia pululans*, *Rhizopus nigricans*, *Trichoderma* sp., *Trichothecium roseum*, and yeast.

(613) Zevada, M. Z., Yerkes, W. D., Jr., Niederhauser, J. S.
1955. Primera lista de hongos de Mexico. Arreglada por huespedes. [First list of fungi of Mexico. Arranged by hosts.] Mex. Ofic. de Estud. Espec. Fol. Tec. 14, 43 pp. 8 M577F.

Phymatotrichum omnivorum on *Argemone* sp., p. 15.

(614) Zimmer, K.
1956. Wirtspflanzen der virösen Rübenvergilbung. [Host plants of beet yellow virus.] [Braunschweig.] Nachrichtenbl. des Deut. Pflanzenschutz. 8: 41-43. 442.9 B832.

On *P. rhoeas*.

(615) Zogg, H.
1944. Die Herzfäule des Oelmohns und ihre Bekämpfung. [The heart rot of the oil poppy and its control.] Switz. Eidg. Landw. Versuchsanst. Zurich-Oerlikon, Flugbl. 14: 1-4. 105.5 Oe7.

Boron deficiency.

(616) ______
1945. Die Blattdürre des Mohns. [Poppy leaf blight.] Schweiz. Naturf. Gesell., Verhandl. 125: 172. 508 B452. RAM 26: 126.

Dendryphium penicillatum [*Pyrenophora calvescens*]

(617) ______
1945. Die Blattdürre des Mohns (*Pyrenophora calvescens* [Fr.] Sacc. nebenfruchtform *Dendryphium penicillatum* [Cda.] Fr.) [Poppy leaf blight (*Pyrenophora calvescens*, perfect stage of *Dendryphium penicillatum*).] Schweiz. Bot. Gesell. Ber. 55: 240-269, illus. 451 Sch9.

(618) ______

1946. Zur Kenntnis Pflanzlichen Abwehrreaktionen. Der Einflusz der Temperatur auf das Zustandekommen der gummösen Demarkationszone. [Contributions to the knowledge of plant defense reactions. The influence of temperature on the development of the gummous demarcation zone.] Schweiz. Bot. Gesell., Ber. 56: 507-522. 451 Sch9.

Dendryphium penicillatum [*Pyrenophora calvescens*] on *P. somniferum*.

(619) Zundel, G. L. I.

1939. Additions and corrections to Ustilaginales. N. Amer. Flora 7 (14): 971-1030. 454 N48.

Entyloma fuscum on *P. somniferum* and *P. rhoeas*, p. 1025.

(620) ______

1943. Notes on the Ustilaginales of the world. III. Mycologia 35: 164-184. 450 M99.

Entyloma fuscum on *P. rhoeas*, p. 167, So. Africa.

(621) Zyubin, B.

1962. Protection of opium poppy from pests and diseases. [Transl. from Russ.] Sel'sk. Khoz. Kirgizii 1962 (1): 31-33.

Peronospora.

(622) ______

1969. Plant nematodes of the opium poppy in Kirgizia. (Transl. from Russ.] 100 pp. Akad. Nauk Kirgizskoi SSR., Frunze.

The following nematodes have been reported on *P. somniferum:*

Acrobeloides buetschlii=Cephalobus persegnis=Acrobeles buetschlii=Cephalobus persegnis f. *buetschlii*

Acrobeloides uberrimus

Aglenchus costatus=Tylenchus elegans=T. buffalora

Alaimus primitivus

Aphelenchus avenae=Aphelenchus agricola=Aphelenchus maupasi

Aphelenchoides fragariae=Aphelenchus fragariae=Aphelenchoides olesistus=A. (*Chitinoaphelenchus*) *olesistus=Aphelenchus olesistus* f. *longicollis*

Aphelenchoides parietinus=Aphelenchus parietinus=
A. striatus f. *aquaticus=A. aquaticua=Cephalobus alpinus=*
Pathoaphelenchus parietinus=Tylenchus bulbosis

Aphelenchoides saprophilus

Aphelenchoides subparietinus

Aphelenchoides subtenuis=Aphelenchus subtenuis=
Aphelenchoides hodsoni

Cephalobus persegnis

Chiloplacus symmetricus=Acrobeles(Acrobeloides)
symmetricus=Cephalobus symmetricus

Diphtherophora communis

Ditylenchus destructor

Ditylenchus dipsaci=Anguillula dipsaci=A. devastatrix=
A. secale=A. putrefacicus

Dorylaimus filiformis=D. polyblastus=D. zograffii=
D. stagnalis filiformis=D. filiformis f. *salinae*

Doryllium uniforme

Eucephalobus elongatus=Cephalobus elongatus=Neocephalobus
elongatus=Cephalobus(Eucephalobus)elongatus

Eucephalobus oxyuroides=Cephalobus oxyuroides

Eucephalobus striatus=Cephalobus bursifer

Eudorylaimus acuticauda=Dorylaimus acuticauda

Eudorylaimus obtusicaudatus

Eudorylaimus papillatus=Dorylaimus papillatus=
D. domus-glauci

Eudorylaimus paraobtusicaudatus=D. samarcandicus

Filenchus filiformis=Tylenchus elegans=T. exiguus=
T. pillulifer

Helicotylenchus multicinctus

Helicotylenchus nannus

Heterodera schachtii

Hexatylus viviparus=Jotonchium viviparum

Lelenchus infirmus=Anguillulina leptosoma f. *minuta*

Mesodiplogaster lheritieri=Diplogaster lheritieri=
Pristionchus lheritieri

Mesodorylaimus bastiani=Dorylaimus bastiana=D. landii=
D. javanicus=D. intermedium=D. tenuicaudatus

Monhystera agilis

Monhystera bulbifera

Mononchus papillatus

Nothotylenchus acris

Panagrolaimus hygrophilus=Panagrolaimus thienemanni

Panagrolaimus rigidus=Leptodera rigida=Anguillula rigida=
Cephalobus rigidus=Cephalobus oxyurus=Rhabditis aquatica

Panagrolaimus subelongatus=Cephalobus subelongatus

Paraphelenchus pseudoparietinus=Aphelenchus
(Paraphelenchus)pseudoparietinus

Paratylenchus hamatus

Paraphelenchus tritici

Plectus granulosus=P. schneideri=P. blanci=P. tubifer

Pratylenchus montanus

Pratylenchus scribneri=Tylenchus penetrans

Pratylenchus vulnus=Anguillulina pratensis=Pratylenchus musicola

Prismatolaimus dolichurus

Prismatolaimus intermedius=Monhystera intermedia=Prismatolaimus hawaiensis

Rhabditis brevispina=Anguillula brevispina=Leptodera cucumeris

Rhabditis intermedia

Tetylenchus productus

Tylenchorhynchus dubius=Anguillulina dubia

Tylenchus agricola=Tylenchus filiformis

Tylenchus davainei

APPENDIX A - Geographical Index of the Pathogens on Papaveraceae[5]

Fungi

Aecidium plenum Arth., 1918.

Texas 580.

Alternaria spp.
Syn.: *Macrosporium* spp.

Denmark 372.
Israel 448.
Italy 415.
Poland 334, 612.
Texas 580.

Alternaria alternate (Fr.) Keissl., 1912.
Syn.: *A. tenuis* Nees 1816/17.

Morocco 452.
Poland 328.

Alternaria brassicae (Berk.) Sacc., 1880.
Syn.: *A. brassicae* (Berk.) Sacc. var. *somniferi* Briard & Har., 1891.
A. brunnea Saw., 1959.
A. papaveris-somniferi Saw., 1959.
A. somniferi (Briard & Har.) Saw., 1958.
Macrosporium bresadolae Parisi, 1924.
M. commune Rab. 1870.
M. papaveris Parisi, 1921.
M. somniferi Garbowski, 1918.

Bulgaria 239.
Czechoslovakia 512.
France 53, 474.
Germany 52, 166.
Italy 396, 397.
Japan 503.
Latvian SSR. 514, 526.
Poland 141.
Sakhalin, USSR. (formerly Japanese)205, 206, 207.
Taiwan 504.
Ukrainian SSR. 140.

Alternaria brassicae (Berk.) Sacc. var. *somniferi* Briard & Har., 1891.
= *A. brassicae* (Berk.) Sacc., 1880.

5/ Numbers after geographical locations refer to entries in the bibliography.

Alternaria brunnea Saw., 1959. = *A. brassicae* (Berk.) Sacc., 1880.

Alternaria lancipes Ell. & Ev., 1888.

Kansas 120, 474.
Texas 580.
USA 126.

Alternaria papaveris-somniferi Saw. = *A. brassicae* (Berk.) Sacc., 1880.

Alternaria somniferi (Briard & Har.) Saw. = *A. brassicae* (Berk.) Sacc., 1880.

Alternaria tenuis Nees, 1816/17. = *A. alternate* (Fr.) Keissl., 1912.

Alternaria tenuissima (Nees ex Fr.) Wilts., 1966.

Sudan 552.

Aregma moniliforme = *Phragmidium mucronatum* (Pers.) Schlecht.

Ascochyta sp.

Lithuanian SSR 62.

Ascochyta chelidonii Kab. & Bub., 1907.

Czechoslovakia 480.

Ascochyta papaveris Oud., 1885.
Syn.: *Diplodinia papaveris* (Oud.) Lind, 1926.

Novaya Zemlya, USSR 474.
South Africa 109.
Spitsbergen 280, 281.

Aspergillus spp. *(sapro.)*

Germany 449.
Poland 612.

Aureobasidium pullulans (de By.) Arnaud., 1918.
Syn.: *Pullularia pullulans* (de By.) Berk.

Poland 612.

Botryotinia fuckeliana (de By.) Whet., 1945. (Imperfect stage is *Botrytis cinerea* Pers. ex Fr. 1801.)

Alaska 13, 580.
Japan 138.
Maryland 580.
Moscow Oblast 429.
New Zealand 54.
Poland 141.
Spitsbergen 280.
Wisconsin 580.

Botrytis spp.

Germany 450.
Sweden 450.

Botrytis arborescens Berk., 1846 = *Peronospora arborescens* (Berk.) de By., 1863.

Botrytis cinerea Pers. ex Fr., 1801 = *Botryotinia fuckeliana* (de By.) Whet., 1945.

Caeoma chelidonii Magn., 1875.

Belgium 421.
France 421.
Germany 471.
New York 471.
Switzerland 421.

Cercospora sp.

Venezuela 531.

Cercospora papaveri Mueller & Chupp, 1936 = *C. papavericola* Chupp, 1954.

Cercospora papaveri Nakata = *C. papavericola* Chupp.

Cercospora papavericola Chupp
Syn.: *C. papaveri* Mueller & Chupp
C. papaveris Saw.
C. papaveri Nakata

Alabama 81, 538, 580.
Brazil 81, 356.
Florida 81.
India 401, 402.
Japan 138, 606.
Kazakhstan, SSSR 225.
Texas 81.
Taiwan 81, 504.
West Pakistan 233, 609.

Cercospora papaveris Saw. = *C. papavericola* Chupp

Cerocospora whetzelii Chupp in Toro, 1931.

Puerto Rico 81, 569, 580.
Venezuela 81.

Cercosporidium guanicense (F. L. Stevens) Deighton, 1967.
Syn.: *Cladosporium guanicense* F. L. Stevens (sapro.)

Bermuda 597.
Brazil 539.
Cuba 539.
Dominican Republic 539.
Puerto Rico 537, 539.
Venezuela 531, 539.

Chaetomella atra Fckl.

Greece 10, 392.

Cladosporium sp.

Sudan 552.

Cladosporium cladosporioides (Fres.) de Vries

Sudan 552.

Cladosporium guanicense F. L. Stevens = *Cercosporidium guanicense* (F. L. Stevens) Deighton, 1967.

Cladosporium herbarum (Pers.) Link ex. Gray, 1921. (sapro.)

Czechoslovakia 428.
Germany 449.
India 20.
Karelian ASSR 277.
Kazakhstan, USSR 225.
Kirghiz SSR 422.
Kirov Oblast 135.
Poland 141, 328, 612.
Tomsk, Siberia 276.
Turkmen SSR 223, 256.
West Pakistan 609.

Clathrospora pentamera (Karst.) Berl.

Spitsbergen 280, 281.

Cucurbitaria papaveracea de N. = *Pleospora papaveracea* (de N.) Wint., 1887.

Curvularia geniculata (Tracy & Earle) Boed.

Turkey 154.

Dacrymyces papaveris Quel.

France 430, 475.

Dactylium roseum Berk.

India 20.
West Pakistan 609.

Dematium pullulans de By.

Victoria, Australia 321.
Queensland, Australia 321.

Dendryphium papaveris (Saw.) Saw., 1959 = *Pleospora papaveracea* (de N.) Wint., 1887.

Dendryphium penicillatum (Cda.) Fr. = *Pleospora papaveracea* (de N.) Wint., 1887.

Dendryphium penicillatum (Cda.) Fr. var. *sclerotiale* Meffert, = *Pleospora papaveracea* (de N.) Wint., 1887.

Dendryphium ramosum Cooke, 1871 = *Pleospora papaveracea* (de N.) Wint., 1887.

Didymaria chelidonii Jacz. in Komarov

Amur Oblast, USSR 254, 477.

Didymellina dianthi Burt
Syn.: *Heterosporium echinulatum* Harkn. (sapro.)

Bulgaria 239.

Diplodina chelidonii N. Naum., 1914

Latvian SSR 514.

Diplodina eschscholtziae Oudem.

Netherlands 479.

Diplodina papaveris (Ouds.) Lind, 1926 = *Ascochyta papaveris* Oud., 1885.

Diplodinula glaucii (Cke. & Mass.) Fl. Tassi

England 555.

Entyloma sp.

Lithuanian SSR 62.

Entyloma bicolor Zopf in Rab., 1878 = *E. fuscum* Schroet., 1877.

Entyloma chelidonii Cif., 1924.

Finland 285.

Entyloma eschscholtziae Harkn., 1884.

California 580.
USA 126.

Entyloma fuscellum Rab. = *E. fuscum* Schroet., 1877.

Entyloma fuscum Schroet., 1877.
Syn.: *E. bicolor* Zopf. in Rab.
E. fuscellum Rab.

Argentina 300.
Belgium 39.
Bermuda 596.
Cyperus 147, 363.
Denmark 279.
Dominican Republic 82.
Finland 285.
France 314, 316, 375, 471, 586.
Germany 288, 326, 433, 471.
Great Britain 471, 483.
Greece 18, 295, 392.
Hungary 50, 60.
Iowa 580.
Lithuanian SSR 64.
Maine 580.
Morocco 452.
Netherlands 386.
New Zealand 56, 60.
Poland 141, 226, 250.
Romania 44, 107, 490, 491, 493.
South Africa 109.
Spain 575, 577.

Switzerland 315, 317, 320.
Texas 580.
Tomsk, Siberia 276.
Turkmen SSR 223, 256.
Turkey 49, 153.
West Pakistan 8, 9.
Yugoslavia 284.

Epicoccum herbarum Croda, 1888. (sapro.)

Czechoslovakia 470.

Erysiphe spp.

Germany 274, 379.
India 519.
Poland 226.

Erysiphe cichoracearum DC. ex Merat
Syn.: *E. communis* (Wallr.) Blum.
E. tabaci Saw., 1928.

Finland 443.
France 94, 95.
Hungary 574.
India 74, 188, 398.
Japan 138.
Kazakhstan, USSR 188.
Lithuanian SSR. 63, 188.
Romania 107.
Siberia 188.
Sudan 551.
Switzerland 319, 320.
Taiwan 188, 499, 500.
Turkestan, USSR 611.
Ukrainian SSR 188.

Erysiphe cichoracearum DC. em. Salm. *f. papaveris* Pot.

Kazakhstan, USSR 224, 225.
Kirghiz SSR 422.

Erysiphe communis (Wallr.) Blum. = *E. cichoracearum* DC. ex Merat

Erysiphe communis (Wallr.) Fr. = *E. cichoracearum* DC. ex Merat

Erysiphe communis (Wallr.) Lk. = *E. cichoracearum* DC. ex Merat

Erysiphe communis Grev. = *E. martii* Lev.

Erysiphe martii Lev.
Syn.: *E. communis* Grev.

Lithuanian SSR 63.

Erysiphe polygoni DC., 1805.

Argentina 22, 176, 177.
California 432, 580, 607.
France 316.
India 72, 73, 78, 257, 260, 262.
Israel 80.
Japan 189.
Lithuanian SSR 64.
Nyasaland 602.
Oregon 517, 580.
Switzerland 37, 315.
Tasmania 7.
West Pakistan 609.
Yugoslavia 440, 441.

Erysiphe tabaci Saw., 1928 = *E. cichoracearum* DC. ex Merat

Fusarium spp.

Bulgaria 239.
Israel 448.
Poland 141.

Fusarium concolor Reinking, 1934.

Poland 612.

Fusarium equiseti (Cda.) Sacc.

Manitoba 159.

Fusarium martii Appel & Wr., 1910.

Spain 367.

Fusarium oxysporum Schl. emend. Snyd. & Hans.

Manitoba 159.

Fusarium [*oxysporum* Schlecht. var.] *cubense* (E. F. Sm.) Wr., 1935.

Spain 367.

Fusarium scirpi Lamb. & Fautr.

South Africa 108, 109.

Fusarium scirpi Lamb. & Fautr. var. *caudatum* Wr., 1931.

Bulgaria 239.
Poland 612.

Fusarium scirpi Lamb. & Fautr. var. *compactum* Wr., 1931.

South Africa 108.

Fusarium solani (Mart.) Appel & Wr., 1910 emend Snyd. & Hans.

Manitoba 159.

Gloeosporium spp.

Japan 180, 181, 182.
New Jersey 405.
Poland 612.

Gloeosporium argemones Ell. & Ev., 1887 = *Glomerella cingulata* (Ston.) Spauld. & Schrenk, 1903.

Glomerella cingulata (Ston.) Spauld. & Schrenk, 1903.
Syn.: *Gloeosporium argemones* Ell. & Ev., 1887.

Kansas 119, 474, 541, 580.
New Jersey 405.
Texas 580.
USA 126.

Helicobasidium purpureum (Tul.) Pat.

Great Britain 406.

Helminthosporium spp. = *Pleospora papaveracea* (de N.) Wint., 1887.

Helminthosporium papaveris E. Henning = *Pleospora papaveracea* (de N.) Wint., 1887.

Helminthosporium papaveris Saw. = *Pleospora papaveracea* (de N.) Wint., 1887.

Heteropatella lacera Fckl.
Syn.: *H. umbilicata* (Fr.) Jaap

Barnul, USSR 360.
Finland 281.
Greenland 281.

Heteropatella umbilicata (Fr.) Jaap = H. lacera Fckl.

Heterosporium echinulatum Harkn. (sapro.) = *Didymellina dianthi* Burt

Heterosporium eschscholtziae Harkn., 1884.

California 470, 580.
USA 126.

Heterosporium groenlandicum Allesch., 1897.

Greenland 476.
Kursk, USSR 423.
South Africa 109.
Ukrainian SSR 423.

Hypocrea spinulosa Fckl.

Finland 468.

Leptosphaeria cheldonii Fautr., 1895.

France 476.

Leptosphaeria papaveris Rostr., 1903.

Iceland 271, 478.

Leptosphaeria pellita (Rab. & Klotzsch.) Sacc.

France 466.

Leveillula papaveracearum Golov., 1956.

Uzbek SSR 188.

Leveillula papaveracearum Golov. *f. argemones* Golov., 1956.

Uzbek SSR 156.

Leveillula taurica (Lev.) Arn., 1921.

France 188.
Sudan 188, 552.
Taiwan 188.
Tanganyika 188, 453.
Uzbek SSR 188.
West Pakistan 188, 233.

Lophodermium svalbardense Lind., 1928.

Spitsbergen 280.

Macrophoma papaveris Camara, 1930.

Portugal 75.

Macrophomina phaseoli (Maubl.) Ashby = *M. phaseolina* (Tassi) Goid., 1950.

Macrophomina phaseolina (Tassi) Goid., 1950.
Syn.: *M. phaseoli* (Maubl.) Ashby, 1927.
Rhizoctonia bataticola (Taub.) Butl., 1925.

India 78, 101.

Macrosporium spp. = *Alternaria spp.*

Macrosporium bresadolae Parisi, 1924 = *Alternaria brassicae* (Berk.) Sacc., 1880.

Macrosporium commune Rab., 1870 = *Alternaria brassicae* (Berk.) Sacc. 1880.

Macrosporium papaveris Bres., 1915 = *Alternaria brassicae* (Berk.) Sacc., 1880.

Macrosporium papaveris Parisi, 1921 = *Alternaria brassicae* (Berk.) Sacc., 1880.

Macrosporium somniferi Garbowski, 1918 = *Alternaria brassicae* (Berk.) Sacc., 1880.

Massaria cleistotheca Harkn., 1884.

California 473.
USA 126.

Melampsora chelidonii-pierotii T. Matsu., 1926.

Japan 310.

Melampsora larici-populina Kleb.

Latvian SSR 514.

Melampsora magnusiana Wagner

Austria 547.
Caucasia, USSR 520.
Denmark 279, 547.
Finland 547.
Germany 547.
Hungary 547.

Japan 208.
Lithuanian SSR. 333.
Norway 547.
Sweden 388, 547.

Metasphaeria patelliformis Kirsch., 1935.

Latvian SSR 244.

Mucilago spongiosa (Leyss.) Morg. (sapro.)

Great Britain 100, 134.

Mucor mucedo Fr. (sapro.)
Syn.: *M. mucedo* (L.) Lk.

Bulgaria 239.
India 20.

Mucor mucedo (L.) Lk. = *M. mucedo* Fr. (sapro.)

Mycosphaerella arthopyrenioideis (Auers.) Larsen, 1932
Syn.: *Sphaerella arthopyrenioideis* Auers., 1869

Austria 467.
Iceland 271.
USA 126.

Mycosphaerella chelidonii (Fautr. & Lambotte) Tomilin, 1969.
Syn.: *Sphaerella chelidonii* Fautr. & Lambotte, 1895.

France 476.

Mycosphaerella pachyasca (Fckl.) Berl. & Vog.

Canada (northern coastline) 98.

Mycosphaerella schoenoprasi (Rab.) [not validly published.] = *Sphaerella schoenoprasi* (Rab.) Auersw.

Mycosphaerella tassiana (de N.) Johans., 1885.
Syn.: *Physalospora polaris* Rostr.
Sphaerella arthopyrenioides Auers.
Sphaerella karajacensis Allesch., 1897.
Sphaerella schoenoprasi (Rab.) Auersw.

Barnul, USSR 360.
China 413.
Ellesmere Land, N. W. Territories, Canada 281.
Norway 281.

Novaya Zemlya, USSR 281.
Spitsbergen 280.

Mycosphaerella tulasnei Jancz.

Bulgaria 239.

Myrothecium sp.

Bermuda 597.

Oidiopsis sp.

India 258.

Oidiopsis papaveris Saw., 1933.

Taiwan 501.

Oidium spp.

Armenian SRR 188.
Australia 188.
Bulgaria 188.
France 19, 188.
Great Britain 188.
India 188, 398.
Israel 188.
Italy 188.
Lithuanian SSR 63.
New Zealand 54, 188.
Portugal 188.
Southern Rhodesia 188, 195, 196, 197.
Spain 188.
Tanganyika 188, 453.

Oidium erysiphoides Fr., 1832.

Argentina 530.
Bulgaria 238.
India 73, 338, 399.
Japan 482, 502.

Oidium erysiphoides Fr. *f. papaveris* Roum.

France 456.

Ophiobolus sativus (Pam., King & Bakke) Ito & Kurib., 1929.

Bulgaria 239.

Ophiobolus tenellus (Awd.) Sacc.

Denmark 279.
France 91.

Ovularia sp.

Venzuela 531.

Ovularia indica R. Rao, 1968.
India 442.

Pellicularia filamentosa (Pat.) Rogers, 1943 = *Thanatephorus cucumeris* (Frank) Donk, 1956.

Penicillium spp. (sapro.)

Bulgaria 239.
Poland 612.

Peronospora spp.

Kirgiz SSR 621.
Thailand 77.

Peronospora arborescens (Berk.) de By., 1863.
Syn.: *Botrytis arborescens* Berk., 1846
P. arborescens (Berk.) de By. *f. papaveris somniferi* Sacc.
P. effusa Rab. var. *papaveris* Desm.
P. effusa Rab. *f. papaveris* Fckl.
P. grisea Ung., 1929.
P. grisea minor Casp., 1857.
P. papaveris Tul.

Algeria 169.
Argentina 169, 282, 283.
Austria 169, 198, 199, 427, 508, 563.
Azerbaidzhan SSR 114.
Belgium 34, 87, 471.
Belorussian SSR 1.
Bulgaria 169, 239.
China 339, 387, 548, 565.
Czechoslovakia 265, 354, 407, 416, 512.
Denmark 169, 174, 279, 533, 534.
Egypt 57, 169, 327.
Esthonia 66, 169.
Finland 169.
France 19, 87, 94, 95, 137, 169, 314, 316, 466, 471.
Georgian SSR 588.
Germany 26, 27, 34, 67, 87, 167, 169, 209, 213, 215, 243, 293, 294, 307, 380, 393, 431, 471.
Great Britain 25, 32, 34, 87, 89, 100, 134, 169, 406, 471.

Hungary 343, 574.
India 20, 70, 71, 72, 73, 78, 103, 169, 257, 259, 261, 308, 338, 399, 424, 513, 543, 561.
Iran 169, 414, 505.
Israel 390.
Italy 34, 87, 169, 471, 553.
Japan 138, 169, 183, 202, 204, 312, 546.
Kazakhstan, USSR 225.
Kirgiz SSR 422.
Kirov Oblast, USSR 135.
Kursk Oblast, USSR 42.
Latvian SSR 40, 41, 66, 169, 514, 525.
Leningrad Oblast 66, 366.
Libya 296.
Morocco 297, 452.
Moscow Oblast 106, 429.
Netherlands 169, 289, 385, 386, 418.
New South Wales 3, 4, 377.
Pakistan 169.
Palestine 444.
Poland 139, 141, 203, 226, 272, 417, 481.
Portugal 158, 169.
Pskov Oblast, USSR 286.
Romania 44, 109, 116, 169, 383, 454, 490, 492, 494, 495.
Sakhalin, USSR (formerly Japanese) 206.
Spain 287.
Stavropol', USSR 347, 361.
Sweden 169, 171, 389, 567.
Switzerland 169, 315, 317, 320.
Tunisia 400.
Turkey 48, 153.
Turkmen SSR 223, 256.
Ukrainian SSR 151, 410.
United States
 Colorado 200, 603.
 Texas 580.
Uruguay 2, 249, 346.
Ussuri Oblast, USSR 365.
Uzbek SSR 611.
West Pakistan 8.
Yugoslavia 46, 92, 137, 162, 169, 172, 216, 219, 220, 221, 248, 253, 332, 394, 439, 441, 524, 540.

Peronospora arborescens (Berk.) de By. *f. papaveris somniferi* Sacc. = *P. arborescens* (Berk.) de By., 1863.

Peronospora argemones Gaeum., 1923.

Czechoslovakia 169.

Denmark 169.
Esthonia 169.
France 169.
Germany 169.
Great Britain 169.
Israel 169, 390.
Kazakhstan, USSR 225.
Latvian SSR 169.
Palestine 444.
Poland 455.
Sweden 169.

Peronospora chelidonii Miy.

China 387.
Japan 191, 545, 566.

Peronospora cristatum Tranz.

Israel 390, 444.

Peronospora effusa Rab. var. *papaveris* Desm. = *P. arborescens* (Berk.) de By., 1863.

Peronospora effusa Rab. *f. papaveris* Fckl. = *P. arborescens* (Berk.) de By., 1863.

Peronospora gaeumanni Mayor, 1949 = *P. meconopsidis* Mayor, 1958.

Peronospora gaeumanni Mund., 1938.

India 358, 399, 403.
West Pakistan 148, 233.

Peronospora glaucii Lob.
Syn.: *P. glaucii* Savul. & Rayss, 1935.

Romania 492, 496.

Peronospora glaucii Savul. & Rayss, 1935 = *P. glaucii* Lob.

Peronospora grisea Ung., 1847 = *P. arborescens* (Berk.) de By., 1863.

Peronospora grisea minor Casp., 1857 = *Peronospora arborescens* (Berk.) de By., 1863.

Peronospora meconopsidis Mayor, 1958.
Syn.: *P. gaeumanni* Mayor, 1949.

Switzerland 320.

Peronospora papaveris Tul. = *P. arborescens* (Berk.) de By., 1863.

Peronospora parasitica de By.

Germany 393.

Peziza eschscholtziae Phill. & Harkn., 1884.

United States 126.

Phoma melaena (Fr.) Mont. & Dur.

Hungary 51.

Phoma morphea Sacc., 1881.

Italy 465, 469.

Phoma rhoeadis Brun.

France 475.
Sweden 369.

Phoma sphaeronaemoides Fautr., 1895.

France 476.

Phoma striaeformis Dur. & Mont. var. *hysteriola* Sacc.

France 61, 466, 469.

Phragmidium mucronatum (Pers.) Schlecht.
Syn.: *Aregma moniliforma*

India 20.

Phyllosticta chelidonii Bres., 1896.

Germany 476.

Phymatotrichum omnivorum (Shear) Dug., 1916.

California 240.
Mexico 613.
Texas 580.

Physalospora polaris Rostr. = *Mycosphaerella tassiana* (de N.) Johans.

Phytophthora spp.

Australia 572.
Victoria, Australia 58.
Western Australia 76.

Phytophthora cactorum (Leb. & Cohn) Schroet., 1886.

Netherlands 376, 572.
Scotland 100, 134.

Phytophthora cryptogea Pethyb. & Laff., 1919.

Germany 379.
New South Wales 3, 377, 378.
Tasmania 6.
Victoria, Australia 59.

Phytophthora nicotiana Breda de Haan var. *parasitica* (Dast.) Waterhouse, 1963.
Syn.: *P. parasitica* Dast., 1913.

Nyasaland 602.
Scotland 100, 134.

Phytophthora parasitica Dast., 1913 = *P. nicotiana* Breda de Haan var. *parasitica* (Dast.) Waterhouse, 1963.

Phytopththora verrucosa Alcock & Foister In Foister, 1940.

Scotland 100, 133, 134, 595.

Pleosphaerulina californica Berl.

California 476, 580.

Pleospora spp.

Canada (northern coast-line) 98.

Pleospora argyrospora Harkn., 1884.

California 473.
United States 126.

Pleospora calvescens (Fr.) Tul. = *P. papaveraceae* (de Not.) Wint., 1887.

Pleospora herbarum(Fr.) Rab., 1873.
Imperfect stage is *Stemphylium botryosum* Wallr.

Canada (northern coast-line) 98, (Cape Chudleigh) 118.
Caucasia, USSR 587.

Denmark 279.
Palestine 445.
Spitsbergen 280.
Tomsk, Siberia 276.
United States 126.

Pleospora infectoria Fckl.
Syn.: *P. vulgaris* Niessl

Canada (northern coast-line) 98.
France 91.
Spitsbergen 280.

Pleospora media Niessl.

Alaska 580.

Pleospora papaveracea (de N.) Sacc., 1883 = *P. papaveracea* (de N.) Wint., 1887.

Pleospora papaveracea (de N.) Wint., 1887.
Syn.: *Dendryphium papaveris* (Saw.) Saw., 1959.
D. penicillatum (Cda.) Fr.
D. penicillatum (Cda.) Fr. var. *sclerotial* Meffert, 1950.
D. ramosum Cooke
Helminthosporium papaveris E. Henn.
H. papaveris Saw., 1918.
Pleospora calvescens (Fr.) Tul.
P. papaveracea (de N.) Sacc., 1883.

Armenian SSR 522.
Austria 198.
Bulgaria 234, 235.
Czechoslovakia 129, 130, 131, 132, 230, 348, 349, 350, 351, 352, 353, 354, 470, 598.
Denmark 368, 369, 371, 373, 374.
France 19, 91, 95, 112, 459, 470, 610.
Germany 23, 110, 124, 163, 164, 165, 167, 168, 307, 325, 364, 379, 380, 447, 449, 450, 451, 509, 510, 559.
Great Britain 470.
Hungary 604.
India 121.
Israel 448.
Italy 458, 468, 470, 604.
Kazakhstan, USSR 225.
Kirghiz SSR 422.
Latvian SSR 514.
Morocco 452.
Netherlands 385, 419, 420.
New South Wales 591.

Poland 24, 93, 139, 612.
Romania 107, 404, 434, 435, 486.
Sakhalin, USSR 206.
South Africa 121.
Sweden 30, 31, 115, 450.
Switzerland 616, 617, 618.
Taiwan 121, 498, 504, 550.
Tanganyika 102.
Turkey 154.
Ukrainian SSR 38, 149, 150, 152, 336.
United States 126.
Yugoslavia 248, 330, 331, 332, 381, 439.

Pleospora pellita (Fr.) Rab. = *P. papaveracea* (de N.) Wint., 1887.

Pleospora scrophulariae (Desm.) Hoehn., 1917.

Franz Josef Land, USSR 281.
Ellismere Land, Canada 281.

Pleospora vulgaris Niessl = *P. infectoria* Fckl.

Pocosphaeria dendromeconis Earle, 1904.

California 480, 580.

Pullularia pululans (de By.) Berk. = *Aureobasidium pullulans* (de By.) Arnaud.

Pyrenophora androsaces (Fckl.) Sacc.

Spitsbergen 280.

Pyrenophora calvescens (Fr.) Sacc. = *Pleospora papaveracea* (de N.) Sacc.

Pyrenophora cerastii (Oud.) Lind, 1924.

Spitsbergen 280.

Pyrenophora chrysospora (Niessl) Sacc., 1884.

Spitsbergen 280.

Pyrenophora paucitricha (Fckl.) Berl. & Vogl.

Canada (northern coast-line) 98.

Pyrenophora pellita (Fr.) Sacc., 1883 = *Pleospora papaveracea* (de N.) Wint.

Pythium spp.

Australia (Canberra) 17.
South Africa 108.

Pythium debaryanum Hesse, 1874.

Netherlands 329.

Pythium mamillatum Meurs, 1928.

Australia (Canberra) 15, 16.

Pythium megalacanthum de By., 1881.

Japan 329.

Pythium oligandrum Drechs., 1930.

South Africa 109, 329, 590.

Pythium spinosum Saw., 1926.

Japan 329.

Pythium ultimum Trow, 1901.

Australia (Canberra) 14, 15, 16.
South Africa 109, 269, 329, 568, 590.
United States 329.

Rhabdospora rhoeadis Tassi, 1904.

Italy 479, 556, 557.

Rhizoctonia spp.

India 70, 71.
Indiana 142.
South Africa 108.

Rhizoctonia bataticola (Taub.) Butl., 1925 = *Macrophomina phaseolina* (Tassi) Goid., 1950.

Rhizoctonia napae West.

India 518.

Rhizoctonia solani Kuehn = *Thanatephorus cucumeris* (Frank) Donk, 1956.

Rhizomorpha spp.

India 20.
West Pakistan 609.

Rhizopus sp.

Bulgaria 239.

Rhizopus nigricans Ehr.

Poland 612.

Sclerotinia p.

Bulgaria 239.

Sclerotinia libertiana Fckl. = *Whetzelinia sclerotiorum* (Lib.) Korf & Dumont, 1972.

Sclerotinia sclerotiorum (Lib.) de By., 1884 = *Whetzelinia sclerotiorum* (Lib.) Korf & Dumont, 1972.

Sclerotinia sclerotiorum (Lib.) Massee = *Whetzelinia sclerotiorum* (Lib.) Korf & Dumont, 1972.

Sclerotinia sclerotiorum (Lib.) Sacc. & Trott. = *Whetzelinia sclerotiorum* (Lib.) Korf & Dumont, 1972.

Sclerotium rolfsii Sacc., 1911.

India 73, 398.

Septoria sp.

Iowa 580.

Septoria argemones Tharp, 1917.

Nebraska 580.
Oklahoma 425, 426, 580.
Texas 560, 580.

Septoria chelidonii Desm., 1842.

Adzkarskaya ASSR 588.
Austria 211, 231, 564.
Belgium 469.

Bermuda 597.
Bulgaria 247, 298.
Caucasia, USSR 520.
China 340.
Czechoslovakia 409.
Denmark 279.
Finland 228.
France 212, 270, 466. 469, 585.
Germany 214.
Great Britain 382, 469.
Hungary 342.
Italy 469, 570.
Japan 503, 544, 545.
Karelian ASSR 277.
Latvian SSR 514.
Poland 341.
Portugal 542.
Puerto Rico 143, 537, 580.
Romania 485, 497.
Siberia 469.
Spain 287, 576, 578, 582.
Stavropol', USSR 361.
Switzerland 210.
Texas 580.
Tula Oblast, USSR 571.
Ukrainian SSR 275, 436.

Septoria rhoeadis Tassi, 1900.

Italy 477, 554.

Sphaerella arthopyrenioideis Auers., 1869 = *Mycosphaerella arthopyrenioideis* (Auers.) Larsen, 1932.

Sphaerella chelidonii Fautr. & Lambotte = *Mycosphaerella chelidonii* (Fautr. & Lambotte) Tomilin, 1969.

Sphaerella dendromeconis Cke. & Harkin., 1880.

California 467.
United States 126.

Sphaerella karajacensis Allesch., 1897 = *Mycosphaerella tassiana* (de N.) Johanson.

Sphaerella morphaea Sacc.

Italy 467.

Sphaerella schoenoprasi (Rab.) Auersw. as *Mycosphaerella* = *M. tassiana* (de N.) Johans., 1885.

Sphaerotheca macularis Magn. f. *papaveris* Simonian, 1958.

Armenian SSR 188, 521.

Sporotrichum pp.

India 20.
West Pakistan 609.

Stachylidium spp.

Italy 415.

Stemphylium alternariae (Cke.) Sacc.

Uzbek SSR and Tadzhik SSR borders 391.

Stemphylium botryosum Wallr. = *Pleospora herbarum* (Fr.) Rab., 1873.

Thanatephorus cucumeris (Fr.) Donk, 1956.
Syn.: *Pellicularia filamentosa* (Pat.) Rogers, 1943.
Rhizoctonia solani Kuehn.

Idaho 517, 580.
India 73, 581.
Indiana 580.
Kansas 580.
Maine 580.
New Jersey 580.
New York 580.
West Pakistan 609.

Trichoderma sp.

Poland 612.

Trichoderma viride Pers. ex Fr., 1829.

India 20.
West Pakistan 609.

Trichothecium sp. (sapro.)

Italy 415.

Trichothecium roseum Lk.

Bulgaria 239.

Germany 449.
Poland 612.

Verticillium spp.

Italy 155.

Verticillium albo-atrum Reinke & Berth.

California 580.
Germany 510, 605.
New York 580.

Verticillium dahliae Kleb.

New Zealand 55.

Whetzelinia sclerotiorum (Lib.) Korf & Dumont, 1972.
Syn.: *Sclerotinia libertiana* Fckl.
S. sclerotiorum (Lib.) de By., 1884.
S. sclerotiorum (Lib.) Sacc. & Trott.
S. sclerotiorum (Lib.) Massee

Bermuda 596, 597.
Crimea, USSR 305.
Germany 450.
Japan 138.
Kazakhstan, USSR 224.
Oregon 517.
Scotland 100, 134.
Sweden 450.
Tanganyika 453.

Yeast

Poland 612.

Bacillus aroideae Town., 1904 = *Erwinia aroideae* (Town.) Holland, 1920.

Bacillus papaveri Christoff [Khristov] in Atanasov, D. et al 1932 =
Erwinia aroideae (Town.) Holland, 1920.

Bacillus papaveris Ram Ayyar, 1927 = Erwinia aroideae (Town.) Holland, 1920.

Bacteria

Poland 612.

Bacterial soft rot

India 71.

Bacteriosis

Poland 141.

Bacterium carotovorum (Jones) Lehm. & Neuman, 1927.

Czechoslovakia 462.

Bacterium papavericola Bryan & McWhorter, 1930.

Bulgaria 234, 236.
Connecticut 65.
Japan 138.
Ohio 562.
Virginia 65.

Bacterium papaveris (Ram Ayyar) Burgv., 1935 = *Erwinia aroideae* (Town.) Holland, 1920.

Bacterium papaveris Takimoto, 1935.

Japan 138, 549.

Bacterium papaverum ([Khristov] Christoff) Burgv., 1935.
Syn.: *Erwinia papaveris* Khristov 1933.

Bulgaria 21, 237.
Latvian SSR 514.
Yugoslavia 248, 332.

Erwinia aroideae (Town.) Holland, 1920.
Syn.: *Bacillus aroideae* Town., 1904.
B. papaveri Khristov in Atanasov, D. et al, 1932.

Bacillus papaveris Ram Ayyar, 1927.
B. papaveris (Ram Ayyar) Burgv., 1935.
B. papaveris (Ram Ayyar) Magrou in Hauduroy, 1937.

India 69, 78, 438.
Japan 138.
Taiwan 311.

Erwinia papaveris Christoff [Khristov], 1933 = *Bacterium papaverum* (Khristov) Burgv., 1935.

Erwinia papaveris (Ram Ayyar) Magrou, 1937 = *E. aroideae* (Town.) Holland, 1920.

Pseudomonas spp.

Tanganyika 592, 593.

Pseudomonas papaveris Lelliott & Wallace, 1955.

India 523.
Tanganyika 278, 453.

Xanthomonas papavericola (Bryan & McWhorter) Dowson

Bulgaria 516.
Colombia 516.
Czechoslovakia 461, 462.
England 516, 528, 529.
Mauritius 111.
Romania 107, 516.
United States
Arizonia 580.
Connecticut 84, 85, 580.
Maryland 580.
Massachusetts 47, 580.
Missouri 580.
New Jersey 580.
New York 580.
Ohio 580.
Oregon 580.
Texas 580.
Virginia 580.

Acrobeloides buetschlii (de Man, 1884) Steiner & Buhrer, 1933.

Kirghiz SSR 622.

Acrobeloides uberrinus Anderson, 1965.

Kirghiz SSR 622.

Aglenchus costatus (de Man, 1921) Andrassy, 1954.

Kirghiz SSR 622.

Alaimus primitivus de Man, 1880.

Kirghiz SSR 622.

Anguina sp.

Rhodesia & Nyasaland Fed. 301, 303.

Aphelenchoides sp.

Rhodesia & Nyasaland Fed. 301, 303.

Aphelenchoides fragariae (Ritzema Bos, 1891) Christie, 1932.

Kirghiz SSR 622.

Aphelenchoides parietinus (Bastian, 1865) Franklin, 1955.

Kirghiz SSR 622.

Aphelenchoides saprophilus Franklin, 1957.

Kirghiz SSR 622.

Aphelenchoides subparietinus Sanwal, 1961.

Kirghiz SSR 622.

Aphelenchoides subtenuis (Cobb, 1926) Steiner & Buhrer, 1932.

Kirghiz SSR 622.

Aphelenchus avenae Bastian, 1865.

Kirghiz SSR 622.

Cephalobus persegnis Bastian, 1865.

Kirghiz SSR 622.

Chiloplacus symmetricus (Thorne, 1925) Thorne, 1937.

Kirghiz SSR 622.

Criconemoides tenuiannulata (Tulaganov, 1949) Zyubin, 1969.

Kirghiz SSR 622.

Diphtherophora communis (de Man, 1880) Goodey, 1963.

Kirghiz SSR 622.

Ditylenchus spp.

Rhodesia & Nyasaland Fed. 301, 303.

Ditylenchus destructor Thorne, 1945.

Kirghiz SSR 622.

Ditylenchus dipsaci (Kuehn, 1857) Filipjev, 1936.

Kirghiz SSR 622.

Dorylaimus filiformis Bastian, 1865.

Kirghiz SSR 622.

Doryllium uniforme Cobb, 1920.

Kirghiz SSR 622.

Eucephalobus elongatus (de Man, 1880) Thorne, 1937.

Kirghiz SSR 622.

Eucephalobus oxyuroides (de Man, 1876) Steiner, 1936.

Kirghiz SSR 622.

Eucephalobus striatus (Bastian, 1865) Thorne, 1937.

Kirghiz SSR 622.

Eudorylaimus aculticauda (de Man, 1880) Andrassy, 1959.

Kirghiz SSR 622.

Eudorylaimus obtusicaudatus (Bastian, 1865) Andrassy, 1959.

Kirghiz SSR 622.

Eudorylaimus papillatus (Bastian, 1865) Andrassy, 1959.

Kirghiz SSR 622.

Eudorylaimus paraobtusicaudatus (Micol., 1922) Andrassy, 1959.

Kirghiz SSR 622.

Filenchus filiformis (Buetschli, 1873) Andrassy, 1954.

Kirghiz SSR 622.

Helicotylenchus multicinctus (Cobb, 1893) Golden, 1956.

Kirghiz SSR 622.

Helicotylenchus nannus Steiner, 1945.

Kirghiz SSR 622.

Heterodera marioni (Cornu) Goody

Israel 448.
Italy 74.
New South Wales 378.
United States 68.

Heterodera radicicola (Greef) Mueller

Germany 36.

Heterodera schachtii Schm., 1871.

Czechoslovakia 512.
Kirghiz SSR 622.

Hexatylus viviparus Goodey, 1926.

Kirghiz SSR 622.

Lelenchus infirmus Andrassy, 1954.

Kirghiz SSR 622.

Meloidogyne spp.

Israel 335.

Meloidogyne arenaria (Neal, 1889) Chitwood, 1949.

Rhodesia & Nyasaland Fec. 302.

Mesodiplogaster lheritieri (Maupas, 1919) Goodey, 1963.

Kirghiz SSR 622.

Mesodorylaimus bastiani (Buetschli, 1873) Andrassy, 1959.

Kirghiz SSR 622.

Monhystera agilis de Man, 1880.

Kirghiz SSR 622.

Monhystera bulbifera de Man, 1880.

Kirghiz SSR 622.

Mononchus papillatus (Bastian, 1865) Cobb, 1916.

Kirghiz SSR 622.

Neotylenchus abulbosus (Steiner, 1931) Goodey, 1933.

Kirghiz SSR 622.

Nothotylenchus acris Thorne, 1941.

Kirghiz SSR 622.

Panagrolaimus hygrophilus Bassen, 1940.

Kirghiz SSR 622.

Panagrolaimus rigidus (Schneider, 1866) Thorne, 1937.

Kirghiz SSR 622.

Panagrolaimus subelongatus (Cobb, 1914) Thorne, 1937.

Kirghiz SSR 622.

Paraphelenchus pseudoparietinus (Micol., 1922) Micol. 1925.

Kirghiz SSR 622.

Paraphelenchus tritici Baranovskaja, 1958.

Kirghiz SSR 622.

Plectus granulosus (Bastian, 1865) de Coninck & Stekh., 1933.

Kirghiz SSR 622.

Paratylenchus hamatus Thorne & Allen, 1950.

Kirghiz SSR 622.

Pratylenchus [undescribed sp.]

Netherlands 35.

Pratylenchus montanus Zubin, 1966.

Kirghiz SSR 622.

Pratylenchus penetrans (Cobb, 1917) Filpj. & Sch. Stkh., 1941.

Netherlands 35.

Pratylenchus scribneri Steiner, 1943.

Kirghiz SSR 622.

Pratylenchus vulnus Allen & Jensen, 1951.

Kirghiz SSR 622.

Prismatolaimus dolichurus de Man, 1880.

Kirghiz SSR 622.

Prismatolaimus intermedius (Buetschli, 1873) de Man, 1884.

Kirghiz SSR 622.

Rhabditis brevispina (Claus, 1862) Buetschli, 1873.

Kirghiz SSR 622.

Rhabditis intermedia de Man, 1880.

Kirghiz SSR 622.

Tetylenchus productus Thorne, 1949.

Kirghiz SSR 622.

Tylenchorhynchus dubius (Buetschli, 1873) Filipjev, 1936.

Kirghiz SSR 622.

Tylenchus sp.

Rhodesia & Nyasaland Fed. 301, 303.

Tylenchus agricola (de Man, 1884) Andrassy, 1954.

Kirghiz SSR 622.

Tylenchus davainei (Bastian, 1865) Andrassy, 1954.

Kirghiz SSR 622.

Viruses and Virus Suspects

Aster yellows

California 515.

Bean yellow mosaic virus

Bulgaria 263, 264.

Beet mosaic virus
Syn.: Poppy mosaic virus

Germany 179, 506, 507.

Poland 139.

Beet yellows virus

Netherlands 83, 291.

Big bud of tomato

New South Wales 185.

Black ring disease (no pathogen found)

Bangladesh [East Pakistan] 11.

Cabbage black ring spot virus

South Africa 109, 113, 322.

Curly top virus

Texas 12, 580.

Leaf crinkle disease

Bangladesh [East Pakistan] 11.

Spotted wilt

California 580.
New South Wales 201.

Tomato spotted wilt virus

California 384.

APPENDIX B--INDEX OF PATHOGENS AND THE HOSTS UPON WHICH THEY ARE FOUND

Fungi

Aecidium plenum Arth.
 Argemone mexicana L., 580[6/]

Alternaria spp.
 P. rhoeas L., 372.
 P. somniferum L., 128, 334, 415, 448.

Alternaria alternata (Fr.) Keissler, 1912, 121 = *A. tenuis* Nees 1816/1817 = *Torula alternata* Fr., 1832.
 P. rhoeas L., 90.
 P. somniferum L., 328.
 P. spp., 452.

Alternaria brassicae (Berk.) Sacc., 1880 = *A. brunnea* = *A. somniferi* = *A. papaveris-somniferi* = *Macrosporium bresadole* = *M. brassicae* = *M. brunnea* = *M. commune* = *M. papaveris* = *M. somniferi.*
 P. somniferum, 52, 53, 140, 141, 166, 205, 206, 207, 239, 242, 396, 397, 415, 474, 503, 504, 512, 526.

Alternaria lancipes Ellis & Ev., 1888.
 Argemone mexicana L., 580.
 Argemone platyceras Link & Otto, 120, 126, 474.

Alternaria tenuissima (Kunze ex Pers.) Wiltshire, 1933; syn. (Nees ex Fr.) Wilts.
 Argemone mexicana L., 552.

Aregma moniliforme cf Phragmidium

Ascochyta chelidonii Kab. & Bub, 1907.
 Chelidonium majus L., 480.

Ascochyta papaveris Oud., 1885 = *Diplodina papaveris* (Oud.) Lind, 280. Ascigerous stage is *Didymella.*
 P. nudicaule L., 109, 474.
 P. radicatum Rottb., 280, 281.

Ascochyta sp.
 P. somniferum, 62.

[6/] Numbers after hosts refer to entries in the bibliography.

Aspergillus sp. Micheli ex Fries (saprophyte).
P. somniferum L., 449.

Aureobasidium pullulans (de By.) Arnaud. = *Pullularia pullulans*, 121.
P. somniferum L., 612.

Botryotinia (*Sclerotinia*) *fuckeliana* (de By.) Whet. Imperfect state is *Botrytis cinerea* Pers. ex Fr.
Eschscholtzia californica Cham., 580.
P. nudicaule L., 54, 580.
P. orientale L., 580.
P. radicatum Rottb., 280.
P. rhoeas L., 580.
P. somniferum L., 138, 354, 429, 450.
P. spp., 13, 141.

Botrytis sp.
P. somniferum L., 450.

Botrytis arborescens cf *Peronospora arborescens*.

Botrytis cinerea cf *Botryotinia*.

Brachycladium penicillatum Corda cf *Pleospora papaveracea*.

Caeoma chelidonii Magn.
Chelidonium majus L., 421, 471.

Cercospora sp.
P. sp., 531.

Cercospora papavericola Chupp, 1954 comb. nov. = *C. papaveri* Mueller & Chupp, 1936; *C. papaveri* Nakata; *C. papaveris* Saw. nom. nud.
Argemone mexicana L., 233.
P. pavoninum Fisch. & C. A. Mey, 225.
P. rhoeas L., 401.
P. somniferum L., 81, 138, 402, 504, 606, 609.
P. sp., 356, 538.

Cercospora whetzelii Chupp in Toro, 1931.
Argemone mexicana L., 81, 569, 580.
Argemone platyceras Link & Otto, 81.

Cercosporidium guanicensis (Stev.) Deighton, 1967 = *Cladosporium guanicensis* (Stev.) Deighton, 1917 (sapro.).
Argemone mexicana L., 531, 537, 539, 580.

Chaetomella atra Fckl.
P. rhoeas L., 10, 392.

Cladosporium sp.
P. somniferum, 128, 137.

Cladosporium cladosporioides (Fresen.) de Vries, 1952.
Argemone mexicana L., 552.

Cladosporium herbarum cf. *Mycosphaerella tassiana.*

Clathrospora pentamera (Karst.) Berl., 1900 nom. cons. prop. vs *Pleospora.*
P. radicatum Rottb., 280, 281.

Colletotrichum circinans (Berk.) Arx.
Eschscholtzia californica Cham., 217.

Cucurbitaria papaveracea cf. *Pleospora papaveracea.*

Curvularia geniculata (Tracy & Earle) Boedijn, 1933 (*Cochliobolus geniculata* (Nelson).
P. somniferum L., 154.

Dacrymyces (*Dacryomyces*) *papaveris* Quel., 1892.
P. somniferum L., 430, 475.

Dactylium roseum Berk. (sapro) = *Tricothecium roseum* Link, 20.
P. somniferum L., 20, 609.

Dematium pullulans de By.
P. sp., 321.

Dendryphion (*Dendryphium*) *penicillatum* cf. *Pleospora papaveracea.*

Dendryphium papaveris cf. *Pleospora papaveracea.*

Dendryphium ramosum cf. *Pleospora papaveracea.*

Didymaria chelidonii Jacz. in Komarov, 1900.
Chelidonium uniflorum Sieb. & Zucc., 254, 477.

Diplodina eschscholtziae Oudem., 1904.
Eschscholtzia crocea, 479.

Diplodina papaveris cf. *Ascochyta papaveris.*

Diplodinula glaucii (Cke. & Mass.) Fl. Tassi, 1902.
Glaucium flavum Crantz., 555.

Drechslera tetramera.
P. somniferum L., 79.

Entyloma sp.
P. dubium L., 62.

Entyloma bicolor Zopf. in Rab., 1878 cf. *E. fuscum*.

Entyloma chelidonii Cif.
Chelidonium majus L., 285.

Entyloma eschscholtziae Harkn.
Eschscholtzia californica Cham., 126.

Entyloma fuscellum Rab. cf. *E. fuscum*.

Entyloma fuscum Schroet. = *E. bicolor* Zopf. in Rab.; *E. bicolor* Rab., 1878 nom. nud., 82; *E. fuscellum*.
Glaucium flavum Crantz., 488.
P. argemone L., 82, 285, 344, 471.
P. atlanticum (Ball.) Coss., 488.
P. commutatum Fisch. & C. A. Meyer, 49, 153.
P. dubium, 44, 82, 279, 284, 285, 288, 344.
P. glaucum Boiss & Hausskn., 488.
P. litvinovii Fedde & Bornm., 223, 256.
P. monanthum Trautv., 488.
P. nudicaule L., 276, 285.
P. orientale L., 488.
P. pavoninum Fisch. & C. A. Meyer, 225.
P. rhoeas L., 8, 9, 18, 39, 44, 82, 109, 147, 250, 284, 295, 315, 316, 317, 320, 344, 359, 363, 375, 386, 392, 433, 471, 483, 488, 575, 577, 586, 596.
P. setigerum D. C., 488.
P. somniferum, 44, 49, 50, 56, 60, 64, 82, 107, 128, 141, 145, 153, 226, 242, 250, 284, 300, 326, 357, 363, 412, 488, 596.
P. spp., 73, 314, 437, 452, 490.

Epicoccum herbarum Cda. (sapro)
P. somniferum.

Erysiphe spp.
P. rhoeas L., 274.
P. somniferum L., 226, 379, 519.

Erysiphe cichoracearum CC ex Merat. = *E. communis* Grev. = *E. communis* (Wallr.) Blum. = *E. martii* Lev. Ref. Blumer 1967:230 = *E. cichoracearum* DC em. Salm. f. *papaveris* Pot.
Chelidonium majus L. var. *asiaticum*, 188.
Eschscholtzia californica Cham., 188.
Meconopsis cambrica Vig., 188.
P. alpinum L., 188.
P. amurense Hort. ex Karrer, 188.
P. angrenicum Panzij, 391.

P. argemone L., 63, 188.
P. dubium L., 188, 320.
P. dubium var. *lecoquii* Lamotte, 188.
P. hybridum L., 188.
P. nudicaule L., 188, 319, 320.
P. rhoeas L., 188, 320.
P. somniferum L., 44, 63, 73, 94, 95, 107, 138, 157, 188, 224, 225, 320, 398, 422, 423, 443, 499, 500, 511.

Erysiphe polygoni DC
Chelidonium majus var. *asiaticum* L., 189.
Eschscholtzia californica Cham., 186.
P. dubium L., 37, 440, 441.
P. nudicaule L., 7, 432.
P. rhoeas L., 316.
P. somniferum L., 22, 64, 72, 73, 78, 80, 128, 176, 177, 186, 242, 257, 262, 315, 517.

Fusarium spp.
P. somniferum L., 141, 239, 448.

Fusarium concolor Reinking
P. somniferum L., 612.

Fusarium equiseta (Cda.) Sacc.
P. rhoeas L., 159.

Fusarium martii Appel & Wor.
P. somniferum L., 367.

Fusarium oxysporum Schl. emend. Snyd. & Hans.
P. rhoeas L., 159.

Fusarium oxysporum Schlecht. f. *cubense* E. F. Smith Wr.
P. somniferum L., 367.

Fusarium scirpi Lamb. & Fautr., 1894.
P. nudicaule L., 108, 109.
P. rhoeas L., 108, 109.

Fusarium scirpi Lamb. & Fautr. f. *caudatum* Wr.
P. somniferum L., 128, 239.

Fusarium scirpi f. *compactum*.
P. rhoeas L., 108.

Fusarium solani (Maet.) Appel & Wr. em Snyd. & Hans.
P. rhoeas L., 159.

Glomerella cingulata (Ston.) Spauld. & Schrenk. Imperfect state = *Colletotrichum gloeosporioides* (Penzig.) Sacc. (v. Arx lists 600 synonyms) Ref.: J. A. von Arx, 1970. = *Gloeosporium argemones* Ellis and Everh, 1887.
Argemone platyceras Link & Otto, 119, 126, 474, 541.
P. orientale L., 405.
P. somniferum L., 180, 181, 182, 612.

Helicobasidium purpureum (Tul.) Pat. Imperfect state: *Rhizoctonia crocorum* DC ex Fr.
P. orientale L., 406.

Heteropatella lacera (Fckl.)
P. alpinum L., 360.

Heteropatella umbilicata (Fr.) Jaap.
P. radicatum Rottb., 281.

Heterosporium echinulatum cf. *Mycosphaerella dianthi*.

Heterosporium eschscholtziae Harkn.
Eschscholtzia californica Cham., 126, 470, 580.

Heterosporium groenlandicum Allesch.
P. nudicaule L., 109, 476.
P. somniferum L., 423.

Hypocrea spinulosa Fckl.
Chelidonium majus L., 468.

Leptosphaeria chelidonii Fautr., 1895.
Chelidonium majus L., 476.

Leptosphaeria papaveris Rostr., 1903.
P. radicatum Rottb., 271, 478.

Leptosphaeria pellita (Rab. & Klotzsch.) Sacc.
P. somniferum L., 466.

Leveillula papaveracearum Golov. f. *argemones* Golov f. nov., 1956.
Argemone platyceras Link & Otto, 156, 188.

Leveillula taurica (Lev.) Arn. = *Erysiphe taurica* Lev.
Argemone mexicana L., 188, 233, 552.
Argemone platyceras Link & Otto, 188.
Eschscholtzia sp., 187, 188, 453.
P. rhoeas L., 188, 233.
P. somniferum L., 188.
P. spp., 187.

Lophodermium svalbardense Lind., 1928.
P. radicatum Rottb., 280.

Macrosporium spp. cf. *Alternaria*.

Macrophoma papaveris Camara, 1930.
P. somniferum L., 75.

Macrophomina phaseoli (Maubl.) Ashby, 1927 = *M. phaseolina* (Tassi.) Goid. 1950 = *Rhizoctonia bataticola* (Taub.) Butl.
P. somniferum L., 78, 101.

Massaria cleistotheca Harkn.
Dendromecon rigidum Benth., 126, 473.

Melampsora chelidoni-pieroti Matsu., 1926.
Corydalis incissa Pers., 310.

Melampsora larici-populina Kleb.
Chelidonium sp., 514.

Melampsora magnusiana Wagner.
Chelidonium majus L., 190, 208, 246, 279, 309, 310, 333, 388, 446, 520, 547.

Metasphaeria patelliformis Kirsch., 1935.
Chelidonium majus L., 244.

Mucilago spongiosa (Leyss.) Morg. (Myxomycete, saprophyte).
Meconopsis spp., 100, 134.

Mucor mucedo (L.) Lk. (saprophyte)
Mucor mucedo Fr.
P. somniferum L., 20, 239.

Mycosphaerella chelidonii (Fautr. & Lambotte) Tomilin, 1969. *Sphaerella chelidonii* Sydowia 3: 41.
Chelidonium majus L., 476.

Mycosphaerella dianthi (Burt.) Jørstad, 1945. Imperfect state is *Cladosporium echinulatum* (Berk.) de Vries, 1952. *Heterosporium echinulatum* (Berk.) Cooke, 1877.
P. somniferum L., 239.

Mycosphaerella pachyasa (Fckl.) Berl. & Vogl.
P. nudicaule L., 98.

Mycosphaerella tassiana (de N.) Johans., 1885.
Mycosphaerella arthopyrenioideis (Auers.) Larsen, 1932.
Physalospora polaris Rostr.
Sphaerella arthopyrenioideis Auers., 1869, Sydowia 3: 40.
Sphaerella schoenoprasi
Imperfect state is *Cladosporium herbarum* (Pers.) Link S. F. Gray, 1821.
P. burseri Crantz, 467.
P. croceum Ledeb., 223, 256.
P. litvinovii Fedde & Bornm., 223, 256.
P. nudicaule L., 126, 411, 413, 473.
P. radicatum Rottb., 271, 276, 280, 281.
P. somniferum L., 20, 135, 141, 225, 268, 277, 328, 422, 428, 449, 489, 609.

Mycosphaerella tulasnei Jancz.
P. somniferum L., 239.

Myrothecium Tode ex Fr. sp.
Argemone mexicana L., 597.

Oidiopsis sp.
P. somniferum L., 258.

Oidiopsis papaveris Saw., 1933.
P. somniferum L., 501.

Oidium spp.
Argemone mexicana L., 188, 398.
Chelidonium majus var. *grandiflorum* L., 188.
C. luteum Gilib., 188.
P. nudicaule L., 54, 188, 197.
P. orientale L., 188.
P. rhoeas L., 63, 188, 453.
P. somniferum L., 19, 188.
P. spp., 188, 195, 196.

Oidium erysiphoides Fr. f. *papaveris* Roum.
Chelidonium majus L., 482, 502.
P. humifusum Fedde., 456.
P. orientale L., 238.
P. rhoeas L., 73, 338, 399.
P. somniferum L., 238, 268, 423, 530.

Ophiobolus sativus (P.K.B.) Ito & Kurib.
P. somniferum L., 239.

Ophiobolus tenellus (Awd.) Sacc.
Chelidonium majus L., 279.
P. rhoeas L., 91.

Ovularia Sacc. sp.
Argemone platyceras, 531.

Ovularia indica R. Rao, 1968. Ascigerous stage is *Mycosphaerella*.
Argemone mexicana L., 442.

Pellicularia filamentosa (Pat.) Rogers.
P. somniferum, 73.

Penicillium spp. (saprophyte).
P. somniferum, 238, 612.

Peronospora arborescens = *Botrytis arborescens* = *Peronospora effusa* f. *papaveris* = *Peronospora grisea* = *Peronospora papaveris*.
Argemone mexicana L., 71, 72, 145, 308, 338, 399, 424, 543, 580.
Argemone platyceras Link & Otto, 200, 603 (incorrectly reported as *P. corydalis*)
Chelidonium majus L., 199.
Meconopsis betonicifolia Franch., 67, 89.
Meconopsis cambrica Vig., 89, 145, 315.
Meconopsis grandis Prain., 89.
Meconopsis integrifolia Franch., 89.
Meconopsis latifolia (Prain.) Prain., 89.
Meconopsis paniculata (D. Don.) Prain., 89.
Meconopsis prattii Prain., 89.
Meconopsis superba King ex Prain., 89.
Meconopsis napaulensis DC (*M. wallichii* Hook.), 89.
M. spp., 100, 134, 370, 406.
P. alpinum, 145, 339, 387, 406, 548.
P. argemone, 34, 66, 71, 89, 127, 145, 198, 279, 293, 345, 466, 584.
P. canadense, 67.
P. commutatum, 48, 153.
P. dubium, 34, 66, 67, 89, 100, 127, 134, 145, 169, 171, 199, 209, 213, 215, 272, 273, 279, 293, 297, 320, 345, 385, 386, 389, 407, 439, 452, 471, 492, 494, 525, 584.
P. floribundum Desf., 67.
P. hybridum L., 296, 297, 452.
P. nudicaule L., 3, 4, 67, 283, 377, 563.
P. orientale L., 320.
P. "pannoicum", 67.
P. polare (Tolm.) Perfiljco, 67.
P. pavoninum Fisch. & C. A. Mey, 223, 225, 256, 391.
P. rhoeas L., 8, 34, 44, 67, 71, 99, 127, 136, 145, 169, 171, 199, 279, 293, 295, 297, 314, 316, 317, 320, 343, 345, 390, 392, 400, 416, 431, 439, 444, 452, 454, 457, 471, 481, 492, 524, 525, 553, 561.
P. setigerum, 26, 297.

Phialea eschscholtziae (Phill. & Harkn.) Sacc., 1889.
Eschscholtzia californica Cham., 472.

Phoma melaena (Fr.) Mont. & Dur.
P. somniferum L., 51.

Phoma morphea Sacc., 1881.
P. somniferum L., 465, 469.

Phoma rhoeadis Brun.
P. alpinum L., 369.
P. dubium L., 279.
P. glaucum Boiss. & Hausskn., 369.
P. nudicaule L., 90, 369.
P. orientale L., 369.
P. paeoniflorum Hort. ex Correa, 369.
P. rhoeas L., 475.
P. umbrosum Hort., 90.

Phoma sphaeronaemoides Fautr., 1895.
Chelidonium majus L., 476.

Phoma striaeformis Dur. & Mont. f. *hysteriola* Sacc.
P. somniferum L., 61, 466, 469.

Phragmidium mucronatum (Pers.) Schlecht. = *Aregma moniliforme*.
P. somniferum L., 20.

Phyllosticta chelidonii Bres., 1896.
Chelidonium majus L., 476.

Phymatotrichum omnivorum (Shear.) Duggar, 1916.
Argemone mexicana L., 580.
Argemone sp., 240, 613.
Chelidonium majus L., 580.

Physalospora polaris cf. *Mycosphaerella tassiana*.

Phytophthora cactorum (Leb. & Cohn) Schroet., 1886.
Chelidonium majus L., 376.
Eschscholtzia californica Cham., 376, 572.
Meconopsis sp., 134.
Meconopsis napaulensis DC. (*M. wallichii*), 100.
P. argemone L., 376.
P. rhoeas L., 376.

Phytophthora cryptogea Pethybr. & Lasf., 1919.
P. nudicaule L., 3, 6, 59, 378, 572.

Phytophthora nicotiana f. *parasitica* (Dastur) comb. nov., 1963.
Eschscholtzia californica Cham., 602.
Meconopsis spp., 100, 134.

Phytophthora verrucosa Alcock & Foister in Foister, 1940.
Meconopsis spp., 100, 133, 134, 595.

Phytophthora spp.
P. nudicaule L., 58, 76, 572.

Plasmodiophora brassicae Wor.
R. rhoeas L., 252.

Pleosphaerulina californica Berl.
Dendromecon rigidum Benth., 476, 580.

Pleospora argyrospora Harkn.
Dendromecon rigidum Benth., 126, 473.

Pleospora herbarum (Pers. ex Fr.) Rab. Imperfect state is *Stemphylium botryosum* Wallr., 1833 (Ellis, 121).
Chelidonium majus L., 279.
P. argemone L., 445.
P. monanthum, 587.
P. nudicaule L., 98, 126, 276.
P. radicatum Rottb., 280.
P. somniferum L., 354.
P. spp., 279.

Pleospora media
P. nudicaule L., 580.

Pleospora papaveracea = *P. calvescens* = *Pyrenophora calvescens* = *Sphaeria calvescens* = *sphaeria pellita* = *Cucurbitaria papaveracea*.
Imperfect state is *Dendryphion penicillatum* = *Dendryphium penicillatum* = *Helminthosporium papaveris* = *H. papaveri* = *Dendryphium papaveris* = *D. ramosum* = *D. penicillatum* f. *sclerotiale*.
Chelidonium majus L., 470.
P. alpinum L., 90, 369.
P. glaucum Boiss. & Hausskn., 373.
P. mursellii Hort., 90, 368.
P. nudicaule L., 90, 126, 369, 371.
P. orientale L., 522.
P. paeoniflorum Hort. ex Correa, 90, 368, 373.
P. rhoeas, 90, 91, 245, 331, 368, 371, 373, 374, 439, 458, 466, 468, 470.
P. somniferum, 19, 23, 24, 25, 30, 31, 38, 45, 90, 91, 93, 94, 95, 96, 97, 102, 107, 112, 115, 121, 123, 128, 129, 130, 131, 132, 139, 144, 150, 152, 154, 163, 164, 165, 167, 168, 178, 206, 226, 230, 234, 235, 239, 242, 245, 248, 251, 289, 290, 304, 307, 313, 324, 325, 330, 332, 336,

Pythium deBaryanum Hesse, 1874.
    Eschscholtzia californica Cham., 329.

Pythium mamillatum Meurs, 1928.
    P. somniferum L., 15, 16.

Pythium megalacanthum de By., 1881.
    P. nudicaule L., 329.
    P. rhoeas L., 558.

Pythium oligandrum Drechs., 1930.
    P. rhoeas L., 109, 329, 590.

Pythium spinosum Saw., 1926.
    P. rhoeas L., 329.

Pythium ultimum Trow., 1901.
    P. nudicaule L., 109, 269, 329, 568, 590.
    P. somniferum L., 14, 15, 16.

Rhabdospora rhoeadis Tassi, 1904.
    P. rhoeas L., 479, 556, 557.

Rhizoctonia napi.
    Argemone mexicana L., 518.

Rhizoctonia solani cf. *Thanatephorus cucumeris*.

Rhizomorpha sp.
    P. somniferum L., 20, 609.

Rhizopus nigricans Ehr. = *R. stolonifer* (Ehr. ex Fr.) Lind (saprophyte).
    P. somniferum L., 612.

Rhizopus sp. (saprophyte).
    P. somniferum L., 239.

Sclerotium rolfsii Sacc.
    P. somniferum, 73, 398.

Sclerotinia cf. *Whetzelinia*.

Septoria argemone Tharp, 1917.
    Argemone alba Lestib., 426.
    Argemone intermedia Sweet, 426.
    Argemone mexicana L., 425, 580.
    Argemone platyceras Link & Otto, 560.

Septoria chelidonii Desm., 1842.
Argemone mexicana L., 143, 537, 539, 580, 597.
Chelidonium majus L., 210, 211, 212, 214, 228, 229, 231, 247, 270, 275, 277, 287, 298, 340, 341, 342, 361, 382, 409, 423, 436, 466, 469, 485, 497, 503, 520, 542, 544, 545, 564, 570, 571, 576, 578, 580, 582, 584, 585.

Septoria rhoeadis Tassi, 1900.
P. rhoeas L., 477, 554.

Septoria spp.
P. sp., 580.

Sphaerella dendromeconis.
Dendromecon rigidum Benth., 126, 467.

Sphaerella karajacensis.
P. nudicaule L., 476.

Sphaerella morphaea Sacc.
P. somniferum L., 467.

Sphaerotheca macularis Magn. f. *papaveris* Simonian, 1958.
P. orientale L., 188, 521.

Sporotrichum Link ex Fr., 1832 sp.
P. somniferum L., 20, 609.

Stachylidium Link ex S. F. Gray; Link, 1809 sp. (saprophyte).
P. somniferum L., 415.

Stemphylium alternariae (Cks.) Sacc.
P. pavoninum Fisch. & C. A. Mey, 391.

Stemphylium botryosum cf. *Pleospora herbarum.*

Thanatephorus cucumeris (Frank) Donk.
Rhizoctonia solani Kuehn. Ref.: von Arx, 1970.
P. nudicaule L., 580.
P. orientale L., 580.
P. rhoeas L., 580.
P. somniferum L., 580.

Thanatephorus spp.
P. nudicaule L., 108, 109.
P. orientale L., 142.
P. rhoeas L., 108, 109.
P. somniferum L., 70, 71.

Thielaviopsis basicola (Berk. & Br.) Ferraris, 1912.
P. nudicaule L., 218.

Torula herbarum (Pers.) Link ex S. F. Gray, 1821.
P. nudicaule L., 470.

Trichoderma viride Pers. ex Fr., 1829.
P. somniferum L., 20, 609.

Trichoderma sp.
P. somniferum L., 612.

Trichothecium sp. (sapro.)
P. somniferum L., 415.

Trichothecium roseum Link ex Fr. = *Dactylium roseum*.
P. somniferum L., 239, 449, 612.

Verticillium sp.
P. orientale L., 104, 323.
P. pilosum Sibth. & Sm., 105.
P. rhoeas L., 104, 155.
P. somniferum L., 128, 355.

Verticillium albo-atrum Reinke & Berth.
Eschscholtzia californica Cham., 463, 580.
P. bracteatum Lindl., 605.
P. orientale L., 463, 580.
P. rhoeas L., 463.
P. somniferum L., 510.

Verticillium dahliae Kleb.
Eschscholtzia californica Cham., 323.
P. nudicaule L., 55.
P. orientale L., 323.
P. rhoeas L., 323.

Whetzelinia sclerotiorum Korf and Dumont = *Sclerotinia sclerotiorum* (Lib.) de By. = *Sclerotinia libertiana* Fckl.
Argemone mexicana L., 596, 597.
Eschscholtzia sp., 453, 594.
Meconopsis spp., 100, 134.
P. somniferum L., 138, 224, 305, 354, 450, 517.

Anemone Mosaic
P. rhoeas L., 192.
P. somniferum L., 192.

Aster Yellows (a mycoplasma)
Eschscholtzia californica Cham., 266, 515.
P. nudicaule L., 267.

Bean Yellow Mosaic Virus
P. somniferum, 263, 264.

Beet Curly Top Virus
P. nudicaule L., 12, 580.
P. orientale L., 12, 580.

Beet Mosaic Virus
Argemone intermedia Sweet, 506.
Argemone mexicana L., 506.
Argemone platyceras Link & Otto, 506.
P. rhoeas L., 506.

Big Bud of Tomato
Argemone mexicana L., 185.

Cabbage Black Ring Spot Virus
P. nudicaule L., 109, 113, 173, 322.
P. rhoeas L., 109, 113, 173, 322.
P. somniferum L., 11, 109, 113, 173, 322.

Callistephus Virus 1 and 1A
Eschscholtzia californica Cham., 580.

Cucumber Mosaic Virus
Argemone mexicana L., 255.
P. orientale L., 255.
P. rhoeas L., 255.

Datura 437 Virus
P. somniferum L., 93A.

Leaf Crinkle
P. somniferum L., 11.

Pelargonium Leaf Curl
P. somniferum L., 193.

Poppy Mosaic
P. somniferum L., 139, 179, 354, 507.

Sugar Beet Yellows
Eschscholtzia californica Cham., 29.
P. nudicaule L., 484.
P. rhoeas L., 614.
P. somniferum L., 29, 83, 291, 464.
P. sp., 29, 86.

Tomato Spotted Wilt
P. nudicaule L., 3, 4, 5, 6, 54, 109, 184, 201, 377, 384, 527, 580.

Virus?
Chelidonium sp., 292.
P. somniferum L., 232.

Yellowing Virus
P. somniferum L., 139, 354, 460.